

WINNING IS EVERYTHING! \$2,000 IN PRIZES—page 114

FREE OFNA POSTER

RADIO CONTROL car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

BEST FASTEST
TOUGHEST
MEANEST
MONSTER

Traxxas
E-Maxx



**RACE MORE
FIX LESS**

Bulletproof your vehicle

ONE-TOUCH CHARGING!

11 easy-to-use
chargers

RACE-READY TA04

Tamiya goes all out



USA \$4.95 Canada \$5.95

1 2 >

0 09128 47380 2

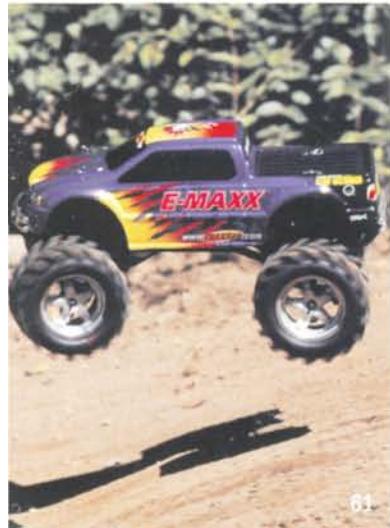
www.rccaraction.com

contents

Volume 15 ■ Number 12 ■ December 2000

DEPARTMENTS

features



track tests



61 First Look: Traxxas E-Maxx
The biggest thing to hit nitro goes electric
 by Peter Vieira

116 Sport Peak Charger Guide
Charge! 11 ways to pump up your packs
 by Kevin Hetmanski

128 Head to Head: Schumacher CAT 3000 vs. Team Losi Double-X4 Worlds Edition
The first world champ takes on the latest
 by the staff of *RC Car Action*

142 Radio Control Car Action Holiday Wish List
The best stuff to give and to get
 by the staff of *RC Car Action*

166 ROAR Off-Road Fuel Nationals
Kinwald and Kyosho take command, Saxton cashes in, and the RC10GT just keeps on winnin'
 by Greg Vogel

182 How To: Bulletproof your Vehicle
8 stay-tough tips

22	Starting Line
24	Readers Write
36	Readers' Rides
222	Product Watch
242	<i>RC Car Action</i> Info Source
248	Featured manufacturer and advertiser information

COLUMNS

31 Inside Scoop
by Chris Chianelli

44 Pit Tips
by Jim Newman

52 Troubleshooting
by Derek Buono

153 Racer News
by Greg Vogel and Derek Buono

204 4x4
by Kevin Hetmanski

194 Piston Power
by Chris Chianelli

246 New Kit News
by Bob Hastings

250 Chris's Back Lot
by Chris Chianelli

ON THE COVER It's here! The Traxxas E-Maxx, in its element. Inset: Tamiya's TA04 double-belter blasts past the barber shop. Photos by Walter Sidas.

72
Yokomo GT-4W
Yokomo's nitro touring hardware
gets serious
by Derek Buono

84
Kyosho Ultima
RB Type R
Ready for the Worlds?
by Peter Vieira

94
Schumacher
Big 6 Lotus Elise
A big-scale exotic on a
small-scale budget
by Derek Buono

104
Tamiya TA04
Less innovative, but more competitive:
track testing the TA04
by Greg Vogel

STARTING LINE



Now that's what I call a "Thrash Test"!

We do our best to give the cars we review a thorough test; we build them stock, race them at the track, keep notes on setup changes and generally try to subject the machines to the use they're likely to get from most RC buffs. Most recently, I reviewed the Kyosho Ultima RB Type R, which appears in this issue. I raced it in the stock truck class and took some hits, then I bolted in a modified motor and railed the pipes good and hard. I concluded the Ultima RB was a durable machine after the pounding I gave it.

As it turned out, I don't know what pounding is. I may as well have reviewed the Ultima by driving it on a field of cotton balls compared with the brutal abuse the poor Kyosho buggy had to endure at the hands of Tim and Brian, the twin demons of destruction (who coincidentally live next door to me). They may appear to be sweet and innocent 6- and 8-year-olds, but trust me: they are each 48 inches of pure mayhem to an RC car.

Tim and Brian cornered me after I returned from testing the Ultima. "Can we try it? Can we try it? Pleeeeaaaassse?" they pleaded. I had been promising them I would let them play with a car, so I figured it was time to make good. I still had a charged pack left after testing, the sun was shining...; how could I say no?

I gathered the boys around to show them how to work the controller. "See? This trigger makes it go; if you just pull it a little, the car will go slow. You don't have to go fast all the time—see?" They nodded. "And this wheel steers the car; you can make a sharp turn, or a wide turn, or anything in between—see?" They nodded again. They got it. No problem; here's the radio; have fun.

Tim went first. He instantly clamped the throttle and drove the Ultima directly into the garage door, which resounded like a giant gong. He never even touched the steering wheel. "Crash!" he exclaimed, laughing wildly. Yeah, crash—hilarious. Somehow, the car wasn't broken. "Tim, you have to steer it," I gently admonished. Steer it he did, right into my ankle. "Sorry," he said, with the sincerity of a used-car salesman. "I think it's Brian's turn," I replied and handed the transmitter over to Brian. "Brian, you're not going to drive like your brother, are you?"

"No."

No problem; here's the radio; have fun. Brian gassed the Ultima straight into a tree. Some leaves fell softly around the car. "Crash!"

"I thought you weren't going to drive like your brother!"

"Tim crashed the garage; I crashed the tree."

I could only laugh, especially after I had retrieved the Ultima and discovered it was still not broken. I decided it would be easier to change the weather than to change Tim's and Brian's driving styles, so I just gritted my teeth and let them go nuts.

They drilled the Ultima into a pile of lumber, pinning the buggy beneath a stack of 4x6s. The body was tweaked (sorry, Richard Muise), but it kept on runnin'. It went off the porch into a bush. Got wedged under the minivan. Hit the garage a few more times. Went down some steps. Almost into the pool. Through the rock garden. Down the swingset's slide. I was greatly relieved when the pack at last dumped after what felt like an eternity. The Ultima was cosmetically scarred, and some grit got into the spur gear, but that was all; it didn't even pop off a ball end.

Is this how we should test cars? I don't think so; would you really think it fair to "test" cars by smashing them into trees? But I am always astounded at just how much RC cars can take. Tim and Brian certainly would have put an older RC car into the intensive care unit with their unrepentant hacking, but the Ultima took the clobbering, and it isn't even meant to be a thrasher.

Today's RC machines can handle ridiculous abuse; it's just one more reason the hobby is better than ever. Add such relatively recent developments as the wide variety of inexpensive, reliable peak chargers (11 reviewed in this issue's "Sport Peak Charger Guide"), easier than ever to run nitro vehicles, a spate of beautifully finished RTRs, and you have a golden age for RC. If you're still on the sidelines, get into it! If Tim and Brian can do it, a sane person like you definitely can.

Peter Vieira
Executive Editor
peterv@airage.com

RADIO CONTROL car action

EDITORIAL

Group Editor-in-Chief TOM ATWOOD
Executive Editor PETER VIEIRA
Senior Editors CHRIS CHIANELLI, STEVE POND
Assistant Editors DEREK BUONO, BOB HASTINGS,
KEVIN HETMANSKI, GREG VOGEL
Editorial Coordinator DANA DONIA
Editorial Assistant MELISSA T. SHAW

COPY

Copy Director LYNN SEWELL
Senior Copyeditor MOLLY Z. O'BRYNE
Copyeditor COREY WEBER

ART/DESIGN

Corporate Art Director BETTY K. NERO
Senior Art Director ALAN J. PALERMO
Promotional Art Director LESLIE COSTA
Associate Art Director JOANNA WINN
Assistant Art Director VICTORIA HOWELL
Staff Photographer WALTER SIDAS
Art/Photo Assistant JOSHUA T. FISCHER

ADVERTISING

Associate Publisher and Director
of Advertising SHARON WARNER
Assistant to Associate Publisher SIRI A. WHEELER
Senior Account Executive MONA TASSONE
Advertising Account Executives JEANINE E. GERBACK,
KATHRYN GEARHART, STEPHANIE MERRILL
Advertising Coordinator ANN T. WIEBER

CIRCULATION

Circulation Director NED BIXLER
Circulation Specialist P.J. UVA
Circulation Assistant SARAH JOSSELYN

OPERATIONS

Director of Operations DAVID BOWERS
Production Associates TOM HURLEY,
TOMLINSON S. WHEELER

PUBLISHING

Group Publishers LOUIS V. DEFARCESCO JR.,
YVONNE M. DEFARCESCO
Associate Publisher SHARON WARNER

CORPORATE

Chairman of the Board ALDO DEFARCESCO
President and CEO LOUIS DEFARCESCO JR.
Senior Vice President YVONNE M. DEFARCESCO



Member Audit Bureau
of Circulations

PRINTED IN THE USA



AirAGE

100 East Ridge, Ridgefield, CT 06877-4606, USA
www.rccaraction.com

Arctic RC

I live in a remote Arctic community, and I have always dreamt of playing with RC cars. Living up here has made fulfilling that dream a little tricky. I have just started a new job running a group home, and this allows me to afford a few more luxuries. My brother-in-law sent me two of your magazines, and not only am I excited, but the boys who live with me are keen as well. All summer, they worked at odd jobs and saved every penny, and now they have enough money to buy their first cars. Could you help us choose a battery? The boys want Tamiya Baja Champs, and I am interested in Associated's T3. Which types of battery packs should we order, and what's the difference between a \$15 battery and a \$100 one?

TYLER BAEHR
Cambridge Bay, Nunavut, Canada

You will have a blast with Baja Champs, and the T3 is a fine racing truck. Both vehicles have well-sealed transmissions that will not require much maintenance, and both are very durable. As for batteries, go with inexpensive 6-cell stick packs. The expensive batteries use "matched" cells; this means each cell has been tested for capacity and voltage and packaged with cells of similar voltage and capacity. This guarantees that the pack is as powerful as it can be and will produce the longest possible run times. Is this important for organized racing? Yes. Will it make a difference to how much fun you

have? No. If anything, you'll have less fun because you'll have to solder the cells together and either solder the assembled pack into the car for each use or install a connector (which you'll have to pay extra for). You'll be much better off with seven, \$15 batteries than one \$100 battery.

The Arctic, eh? I'm guessing you don't have cable, your snowmen have very long life expectancies, and it takes Domino's a long, long time to get out there with the pizza.

—Pete

More RC on TV

Great "Starting Line" editorial, Pete! ("RC on TV," October 2000 issue). It would be awesome to see an entertaining, informative program that provides plenty of "how to" segments, detailed tips and interviews with the hobby's biggest and hottest stars, including Kinwald, Baker, Hirosaka, Jun, Cyril and Johnson, to name a few. Even better: how about having these top drivers talk about driving technique and race preparation, or maybe hearing from the men and women who design and manufacture these miniature speed machines and the products we need to race and run them? Another great idea would be to show the hottest new products the industry has to offer each and every week—maybe even attend the RCHTA show in Chicago! Finally, make a show accessible to everyone without the need for cable; provide it free of charge and have it air without commercial interruptions.

Well, I have seen such a

program on my very own TV set, in the comfort of my living room—RC TV! It's the program you said you wanted in your editorial. You should tune in sometime; I think you're in for a pleasant surprise.

JEFFREY MATURO
Executive Producer
RC TV

I received a lot of email supporting my "Starting Line" piece, and the letters often included praise for RC TV. I also received some angry letters from readers who thought I was "against" RC TV (untrue). For the record, I support the efforts of anyone trying to get RC anything on television! I followed up with Jeffrey regarding RC TV air times and dates. He explained the scheduling varies with the 250 independent stations that carry the show. If your PBS station doesn't carry RC TV, it's up to you to contact the station's program director via phone or email to request RC TV. So rally your RC buddies and get to it!

—Pete

Foam Flogger

I'm interested in getting a Bolink Nitro Racer like the one in your June 2000 issue's "Track Test," but I can't see myself spending \$40 on tires for a car that will rip up foams in no time. Are there any cheaper, long-lasting tires, or is there some way that I can mount touring tires on oval rims? [email]

MATT SCHUBKEGEL



I burned through a lot of tires with my first pan car, but I soon discovered that if treated properly, foam tires can last a while. Here are some tips:

- Use a firm-compound tire. Don't rely on soft rubber for grip; get "blue" tires, or something even firmer. To get more rear traction, install a rear wing on your car—the bigger, the better. You could even put an off-road wing on there—anything to plant that rear end.
- Take it easy on the power slides and skids. Such abuse leads to chunking, and that's what sends tires to the trash bin. Since it's usually a lack of rear traction that leads to slides and skids, you'll be one step ahead of the game if you follow the first tip.
- Inspect your tires between runs. Look for chunks beginning to lift off the tread, and check the sidewalls to see whether they're pulling away from the rims. Use a drop of CA to fix any trouble spots you see.

BRP sells touring-car tire adapters for pan cars. The adapters cost about \$40, but they are beautifully constructed of machined aluminum. Try the foams first; follow my advice, and you should be able to keep those foamies spinning until the rubber looks as if it's painted on the rim.

—Pete

YOU SAID IT "heroes for their world-class hearts"

Some time ago I contacted Team Losi about a very special 13-year-old RC racer in our community, Brian Raff, who is battling cancer. I asked if it would be possible for them to come to our track to race with Brian, as it would mean so much to him. We are about two hours away from Team Losi headquarters and I offered to cover all of their expenses just to make this happen.

Shortly after receiving my request, Gil Losi Sr. (Pops) called me to say they would love to come; all I had to do was to let them know when and where.

Well, we scheduled the race without realizing it conflicted with a big race elsewhere that Team Losi would normally be part of. Instead of asking us to change our schedule, Pops showed up with his wife Janet, Brian Kinwald, Travis Amezua, Todd Hodge and Todd's girlfriend. He took Brian and his family out for lunch and

brought him a new Losi Triple-XT truck. He would not accept any reimbursement from me and spent the entire day racing with Brian and all the other local racers who came out to be part of such a special event.

I know the rest of Team Losi are not looking for any special recognition, and they cannot always be as generous with their time, as they are very busy racing all over the country and world, but they did something here that was so wonderful. They made this boy realize just how special he is. They gave him a day that he will cherish.

These guys are heroes to many for their world-class racing skills, but they're heroes to us for their world-class hearts!

Bill Deem
Ridgecrest, CA

I've seen the Team Losi guys go out of their way for "regular" racers at every event I've been to, so although I'm impressed with their generosity on Brian's behalf, I'm not surprised.

The rest of us might not have the resources to be as generous as Pops, but we can all share our thoughts, prayers and positive energy with Brian Raff. Send your get-well wishes and support for Brian to me at peterv@airage.com, or mail them to the address at the bottom of the page. I'll forward them to Brian and his folks. Let's help out our friend.

—Pete

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

EMAIL ■ Derek Buono: derekb@airage.com ■ Chris Chianelli: chris@airage.com ■ Bob Hastings: bob@airage.com ■ Kevin Hetmanski: kevinh@airage.com
■ Steve Pond: steve@airage.com ■ Peter Vieira: peterv@airage.com ■ Greg Vogel: gregv@airage.com



BY CHRIS
CHIANELLI

HIROSAKA, HARA TAKE ON-ROAD WORLDS

THE 2000 IFMAR ON-ROAD WORLD CHAMPIONSHIPS are being

wrapped up as I type this. This year's Worlds was the first to officially include the highly popular International Scale Touring Car (ISTC) class (ISTC was just an exhibition at the 1998 Worlds). The event was held at the Yatake Arena in Tsukuba City, Japan, where Yokomo does a lot of testing. Needless to say, the Yokomo drivers enjoyed an advantage (just one of the event's many controversies). We'll have in-depth coverage of the Worlds from Derek "What do you mean you don't take American Express?" Buono in the next issue, complete with a look at the new Losi XTC sedan, Worlds-winning gear and inside info you'll find only in *Radio Control Car Action*. Until then, here are the top three Worlds drivers in each class:

Pro-10

1. Masami Hirosaka	Yokomo
2. Daisuke Yoshioka	Yokomo
3. Hideo Katazawa	Yokomo

1/12 scale

1. Masami Hirosaka	Yokomo
2. David Spashett	Trinity
3. Daisuke Yoshioka	Yokomo

ISTC

1. Atsushi Hara	Yokomo
2. Mark Pavidis	Associated
3. Masami Hirosaka	Yokomo



ATSUSHI HARA



MASAMI HIROSAKA



TRINITY TIME WARP!

Green Machine 3 Rebuildable Stock

You're looking at the first in a series of Speedworks "retro" motors to come from Trinity. The names may take you back, but the technology is modern all the way. The Green Machine is fully rebuildable with a P2K endbell (so it has those handy built-in capacitors), but the can and armature are new. The arm uses the P2K laminations in a tri-rotor format, and the can has three large openings for increased airflow. According to Trinity, the Green Machine 3 is designed for greater rpm than the torquey P2K. For big tracks and ovals, the GM3 could be the hot ticket. One thing's for sure: it will look cool on your car's motor plate or in its rear pod.

More Trinity stuff...

The latest Monster Horsepower brew was custom-mixed with input from the Picco team and offers a proven blend of lube and nitro for maximum performance. (Not convinced? Kinwald used this stuff to win the 1/8-scale buggy class at the ROAR Off-road Fuel Nats.)

And on the battery front, Sanyo 3000 packs are now available in all varieties, from stick packs to VIS-EXtra team packs.

Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; fax (732) 635-1640; www.teamtrinity.com.



Picco Blend 20%



TAMIYA GETS SUPER-SERIOUS TAMIYA TGR

It's here! Tamiya's surprise follow-up to the fun-oriented TGX Mk.1 "super-scale" (or "1/8 scale," as Tamiya modestly refers to the class) chassis has arrived, but it's not the versatile, do-anything machine the TGX was (or is, since Tamiya is still selling it). The TGR is a performance-first competition machine, as evidenced by its full bearing set, sticky belted slicks, narrow aluminum chassis with carbon-fiber upper deck, clutch-type, 2-speed transmission and low-profile, upper/lower arm suspension. An all-new slide-carb .15 engine is also part of the TGR package, which (in true racer fashion) does not include a body. For a full review of Tamiya's latest super car, check out the most recent issue of *Radio Control Nitro*, on sale now.

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200; (800) TAMIYA-A; fax (949) 362-2250; www.tamiya.com.

TAMIYA PAJERO RTR

Tamiya is also getting serious about ready-to-run. Yes; Tamiya has had plenty of success with the "QD" (Quick Drive) line, but the QDs weren't really RTRs in the sense of a factory-built hobby kit; they were really just RC toy cars (but to be fair, they were some of the nicest examples of the genre). Tamiya's first shot at a "real" RTR looks like a winner. The Pajero is certainly the most scale-looking

RTR I've seen, and it's built on a unique chassis. You might remember the platform from the Jeep Wrangler or Isuzu Mu kits; it features a very realistic trailing-axle rear end with straight axle, a uni-body-like chassis "tub" complete with fender wells, independent front suspension, a beefy 4WD drive train with steel universal-joint shaft drive and some of the best-looking wheels and rubber in RC. Tamiya supplies its house-brand AdSpec radio, which is manufactured for them by Futaba.

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200; (800) TAMIYA-A; fax (949) 362-2250; www.tamiya.com.



CLEAN MACHINE

T.A. EMERALD NITRO CLEAN

Remember the days when RC cleaners were caustic concoctions likely to melt your car's body and disintegrate its electronics at the

same time as they tried to remove grease and grime? I don't miss those days. T.A.

Emerald's Nitro Clean is a new breed of cleaner; according to the label, it's safe on car bodies, plastics and radio gear, and it evaporates quickly so you can hurry up and get your car dirty again. The trigger-type nozzle is a nice feature, too.

T.A. Emerald Industries,
1580 E. Edinger, Unit 9,
Santa Ana, CA 92705;
(714) 972-9400;
fax (714) 972-9400.



GUN SLINGER TPI Infrared Thermometer



If you aren't packing a temp gun in your nitro toolbox, you aren't tuning your engine as accurately as you could be. TPI's chunky green unit has some features that make it good for RC. It's laser-sighted, so you can see exactly where your reading is coming from, and because it's a non-contact thermometer, the TPI can get down into heat-sink heads for accurate readings. The 373 model is shown; it has a large LCD display, can show temps in Celsius or Fahrenheit, can hold readings and is warranted for three years.

Test Products Intl. Inc., 9615 SW Allen Blvd., Ste. 104, Beaverton, OR 97005; (503) 520-9197; fax (503) 520-1225; www.testproductsintl.com.

Sticky Stuff

Now Available, The Same Glue Brian Uses To Put His Multi-Stage Inserts Together And To Glue His Tires To The Rim!

TK3701 Bead Loc Thick Slow Drying, \$7.50

TK3700 Bead Loc Thin Fast Drying, \$7.50

TK3504 The Bomb Insert Glue, \$7.50

www.teamtrinity.com

TEAM **kinwald** **TRINITY**

No photos yet on the latest car to hit pro-level electric touring, but the XRAY T1 looks like a strong challenger, and XRAY has some powerful connections: Serpent USA is distributing the cars, and Hudy has been contracted for special spring-steel transmission parts (which Hudy has produced for Serpent cars for many years). XRAY's T1 appears to have taken some design cues from the Corally C4, but the cars do not share parts. If you look closely, you'll see many subtle but important differences. Look for photographs of the "real thing" next issue, and a complete review soon.

Here's a short list of the T1's major features:

- Rebuildable universal drive shafts with integrated hex hubs.
- CNC-machined aluminum front and rear bulkheads.
- CNC-machined 2.5mm graphite chassis decks.
- Serpent shocks with externally adjustable damping.
- Adjustable one-way front layshaft pulley.
- Externally adjustable ball diffs with "Labyrinth Dust Covers."
- Kevlar-reinforced drive belts.
- Hudy slick tires andwheels.

LATE-BREAKING XRAY NEWS!

According to XRAY, a limited run of T1 kits will include a Hudy Setup System, a $\frac{1}{10}$ setup-board decal, Hudy down-stop gauges and support blocks and a five-piece Hudy wrench set. How much extra? FREE! No word on how many free-stuff kits will be produced; reserve one at www.teamxray.com.



XRAY SPECs

XRAY T1 enters
the touring-car fray

SHOCKING NEWS!

The Choice Of Matt Francis, Brian Kinwald
David Spashett, Josh Cyril & Barry Baker

Available in 10-15-20-25-30-35-40-45-50-55-60-70-80-90-100
Plus the following "1/2 Weights" 27.5-32.5-37.5-42.5

1/2 Weights....The Idea So Good
The Competition Had To Steal It

\$3.50

100% Pure Silicone
Blended According To The General Electric
Blending Chart. Blended By Volume to a
Tolerance of .001% Or Less!

TRINITY 40 Weight
Front & Rear

ready race of champions

The Champion's Choice

TRINITY

the fabulous
barry baker



MIGHTIER MAXIMUMS

DURATRAX MAXIMUM PRO TRUCKS

For the truly screwdriver-phobic, DuraTrax now offers fully upgraded versions of the Maximum ST and MT trucks, so you can have all the fun of a fully customized rig without touching the toolbox. In addition to the usual factory-finished body and starter set with glow starter, fuel bottle and transmitter/receiver batteries, the new "Pro" trucks include T6 aluminum chassis, aluminum hub carriers and steering knuckles, 2-speed trannies (unusual for off-road cars), tuned pipes, universal-joint axles, chrome rims and other optional parts. The Pro trucks are also more powerful, thanks to larger Torq 16 engines (.16ci displacement instead of .12), and they come equipped with DuraTrax/Futaba radios.

DuraTrax; distributed by Great Planes, 2904 Research Rd., P.O. Box 9021, Champaign, IL 61826-9021; (800) 682-8948; fax (217) 398-0008; www.duratrax.com.

I SEE YOUR TRUE COLORS ... OTT-LITE TRUECOLOR FLEXARM PLUS LAMP

Wow ... I can't believe I actually introduced this product by referencing a Cyndi Lauper song (later remade even more abysmally by Phil Collins). Now I'm paying the price: the song is stuck in my head. Hey, at least the lamp is cool. It includes both weighted and clamping bases, and the articulated, rotating neck makes it easy to position the light wherever you need it. But what makes the Ott-Lite so special is its TrueColor bulb, which simulates sunlight for accurate color rendering (great for painting), enhanced contrast and reduced eye-strain. The 18W model is shown. I've been using one for a while now, and it really helps.

Environmental Lighting Concepts Inc., 1214 West Cass St., Tampa, FL 33606; (800) 842-8848; (813) 621-0058; fax (813) 626-8790; www.ott-lite.com.



TC3 HITS THE DIRT

Associated TC3 Rally Conversion Kit

Don't shelve your TC3 when off-road season kicks off: "rallyfy it," and hit the dirt! The new TC3 rally conversion kit includes everything you need to give your TC3 wide-track, long-travel suspension for all-terrain running. You get longer arms to pump up the TC3's width to 200mm, Pro-Line Wabash rims and knobby rally tires and a new, kicked-up front bumper that won't dig in on hard landings or steep jump approaches. The kit also includes the longer drive shafts and turnbuckles required to run the wide arms, plus rally-tuned springs. All you need to add is a 200mm rally body. If your track isn't into ROAR rules, you can even run the wide setup on-road for extra grip—and make it 10mm more difficult for cars to pass you!

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626-1403; (714) 850-9342; fax (714) 850-1744; www.rc10.com; www.teamassociated.com.



PEOPLE'S CHOICE ENGINE HOBBY PEOPLE XTM .15



That's "people's choice" as in "Hobby People" (you know them; they used to be called "Hobby Shack"), and the new XTM .15 is the popular shop's entry into the ever expanding nitro-engine market. The XTM should do just fine; according to Hobby People, it has a dual-bearing crankshaft and true ABC (aluminum piston, chrome-plated brass sleeve) internals. A "standard" XTM with square heat-sink head and rotary carburetor will be offered, as will a "race" XTM with round head and slide carb, as shown here (with optional pull-starter).

Hobby People, 1840 Bandelier Cir., Fountain Valley, CA 92728; (714) 964-0827; fax (714) 962-6452.

HITEC HANDOUTS HITEC TRACK IMPROVEMENT FUND

Are you part of an RC club? If you are, don't miss out on this generous offer from Hitec!

Hitec RCD Inc. has announced the establishment of a track improvement fund to help RC clubs improve existing tracks. Any club can apply to Hitec; 10 tracks will be chosen to receive \$1,000 toward improvements.

APPLICATIONS MUST INCLUDE THE FOLLOWING VERIFIABLE INFORMATION:

- Contact name, address and phone number.
- Names, addresses and phone numbers of three members of the club's board of directors.
- Number of dues-paying club members.
- A brief plan of proposed improvements.
- Whether the field is club-owned or leased, and if leased, how much longer lease has to run.

In addition to the above information, supply a statement in 100 words or less, "from the heart," that defines why your club should receive money from this fund.

Entries must be postmarked before February 1, 2001; awards will be disbursed by April 1, 2001.

\$1,000

SEND ENTRIES TO

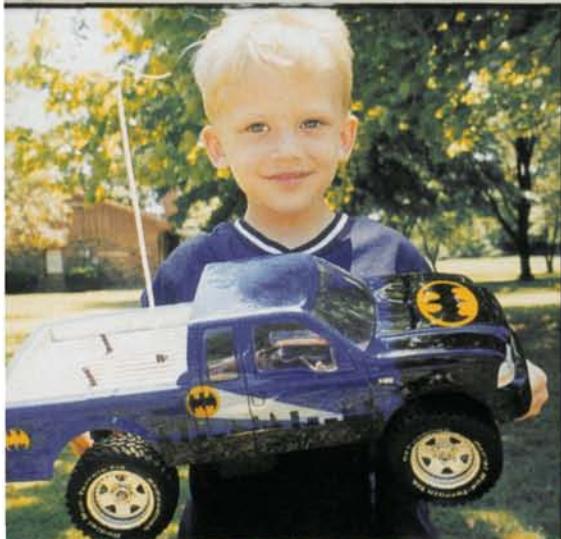
Hitec RCD Inc.
Field Fund
12115 Paine St.
Poway, CA 92064

Win a \$500 gift certificate from DuraTrax! Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids), and a brief description, to Readers' Rides, RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free RC Car Action decal sheet and will be eligible to win a \$500 gift certificate from DuraTrax in the "Readers' Rides of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

Readers' Rides

Robert Selig, Delmar, NY Associated RC10

This car was formerly a dirt-oval racer, but Robert did some radical renovations—including cutting an old Pro-Line Vision body and adding two Kyosho nylon wings. Among its features are a Trinity Diamond motor, a Tekin 411P2 ESC and Pro-Line Road Rage tires. Though now retired for fun play only, Robert says "Moosebrew" is a two-time track champ.



Luke and Steve Morrison, Claremore, OK Tamiya Chevy S-10

This is Luke's first set of RC wheels; the bowtie features a Futaba radio and ESC and a stock 540 motor. Luke's father, Steve, airbrushed the Batman graphics and says he'll upgrade the car when his son's skills improve.



John and Jamie Donati, Chesterfield, VA Tamiya Clod Buster, HPI Nitro RS4 and RS4MT

This "Bigfoot" Tamiya Clod Buster belongs to John Donati; the monster truck features a Futaba ESC and DuraTrax bearings. John's 13-year-old son, Jamie, owns the two HPI vehicles. His Nitro RS4 Viper has a 2-speed transmission and Pro-Line wheels; the RS4 MT has a Trinity Chameleon 39-turn motor.



Matthew McDaris, Weaverville, NC HPI Nitro MT

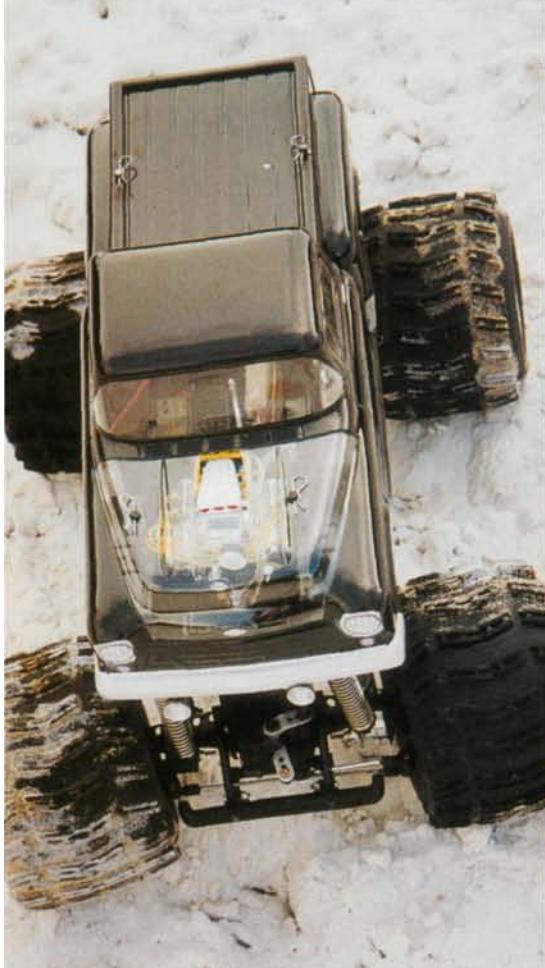
Matthew wanted to up the speed on his Nitro MT, so he swapped the stock .15FE for an O.S. .21 RG. He also installed an HPI 2-speed tranny along with an OFNA 2-speed and a Megatech tuned pipe.

sponsored by

Readers' Rides

Carl Hidalgo, San Diego, CA **HPI RS4 Pro2**

This California creation is equipped with a Trinity 1500 saddle pack, a Trinity Speed Gems 2 10-turn triple motor, a Novak Tempest ESC and a Hitec FM Lynx controller. HPI slicks on R Racing Products spoked wheels grip the track.



William H. Tinny, New Port Richey, FL **Tamiya Clod Buster**

William's Clod digs into some Florida sand with the help of two Magnetic Mayhem motors and a Futaba MC210CB ESC. Topping it off is a Parma '57 Chevy pickup body with a clear hood—showing off the Parma Hemi motor. Talk about Muscle (on the) Beach!



Tristan Gibbs, Barbados, West Indies **Tamiya TA03R and TA02**

These red-hot cars are full of tricks. The TA03R with a Ram truck body has all the factory options as well as two ball diffs. It's powered by a Trinity Monster Stock JR 4 Pro motor and a Tekin SpeedStar ESC. The TA02 is equipped with a Special Edition chassis running two gear diffs, a Trinity Paradox Pro motor and a Tekin SpeedStar ESC.



Nancy Ryan, Smithfield, VA **DuraTrax Maximum STs**

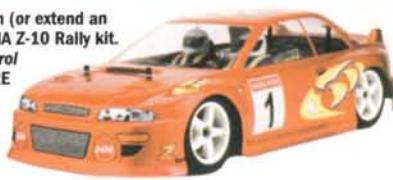
Nancy and her husband each own a Maximum ST; Nancy's has HPI wheels, DuraTrax Diamond spiked tires and an HPI Baja Bug body. Her husband's ST features Pro-Line Dirt Hawgs and RPM wheels on the front with DuraTrax wheels and tires on the back. It's topped off by a Bolink Silverado body. Both vehicles have DuraTrax high-flow air filters, bearings and upgraded steering servos. ■

sponsored by

Pit Tips

ILLUSTRATED BY
JIM NEWMAN

WIN AN OFNA Z-10 RALLY! *Radio Control Car Action* will give a 6-month subscription (or extend an existing subscription) to the author of each idea used in "Pit Tips." "Top Tip" winners will win an OFNA Z-10 Rally kit. All published "Pit Tip" authors are sent an OFNA yo-yo. Send your tip to Jim Newman, c/o *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one nor return unused material.

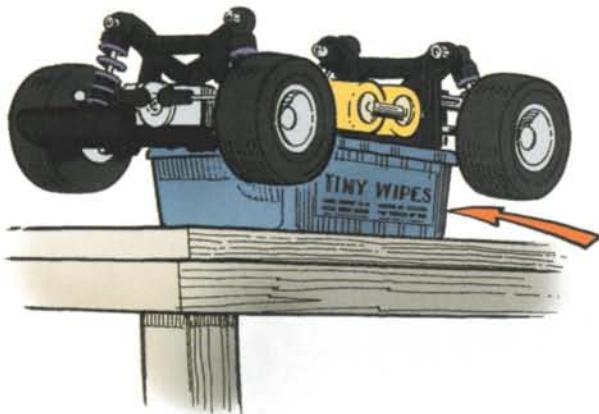


Work and Wipe Stand

Take a box of disposable wipes to the track. The towels work great to clean the car body, and the container makes a good car stand. When you're out of wipes, use the empty container as a storage bin.

TODD THORNE, SR.

Pittston, PA



Organized Tires

Tired of your wheels and tires rolling off the pit table or getting mixed in with other sets? Tie tires of the same compound together with long, colored tie-wraps. Use a different color for each tire compound.

DIRK ZOKWEHR
Huntsville, AL

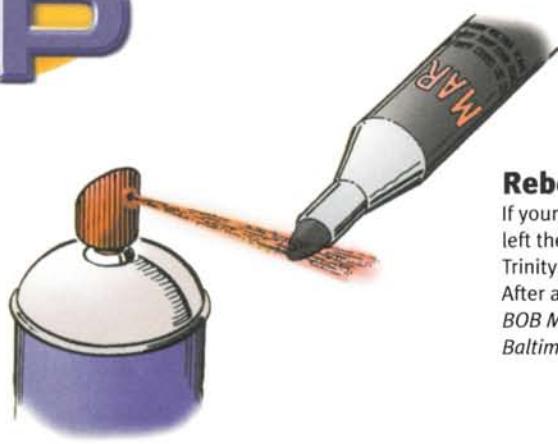


Glow-Igniter Discharger

Your glow igniter will lose its useable capacity if it's not cycled properly. Use a 1.5V bulb that fits inside your igniter's clamp and discharge the battery prior to recharging it.

PETE CONRAD
New Milford, CT

TOP TIP

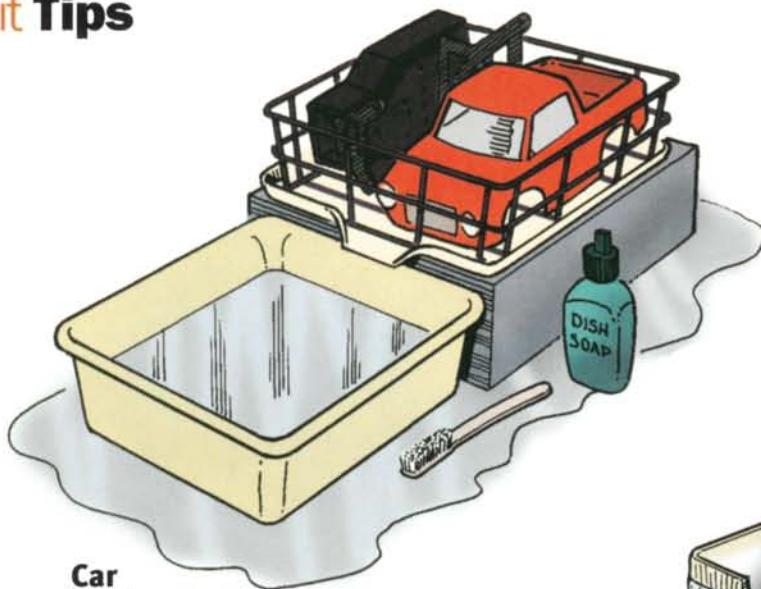


Reborn Body Marker

If your body marker has dried out because you accidentally left the cap off, don't throw it away. Spray the tip with some Trinity Body Blast, and set the pen aside for about 10 minutes. After a few strokes, the marker will work like new.

BOB MELAS
Baltimore, MD

Pit Tips



Car Wash

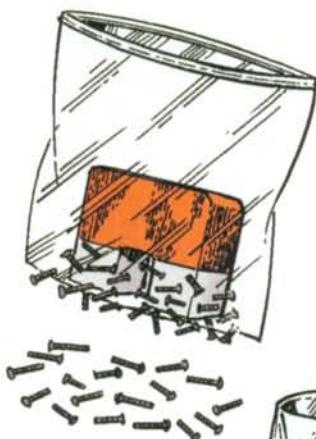
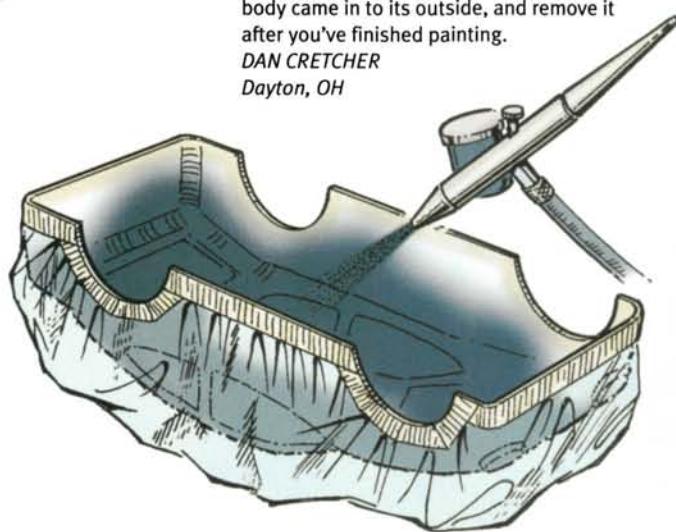
A dishwashing basin and drying rack make a safe and convenient chassis cleaning station after a day at the track. The rack holds the components while they dry.

WALTER JONES
St. Marys, PA

Protect that Body

If your new body didn't include a protective overlay cover, you can still protect its exterior. Before you paint, tape the bag that the body came in to its outside, and remove it after you've finished painting.

DAN CRETCHER
Dayton, OH



Hardware Cleanup

This is a quick way to pick up all of those stray screws on your work-bench. Turn a zip-type sandwich bag inside out, and place a strong magnet in it. Run the bag across the bench, and once the screws are stuck to the magnet, turn the bag right side out and seal it shut.

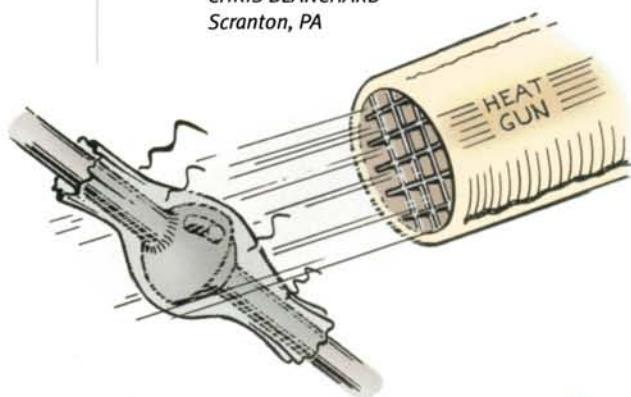
RANDALL MCCRAY
New Orleans, LA



Simple Axle Boot

Use this trick to keep your axles lubricated: grease the axle joint and put a short length of heat-shrink tubing over it. Hit the joint with a heat gun; your lube stays in and the dirt stays out.

CHRIS BLANCHARD
Scranton, PA



Troubleshooting

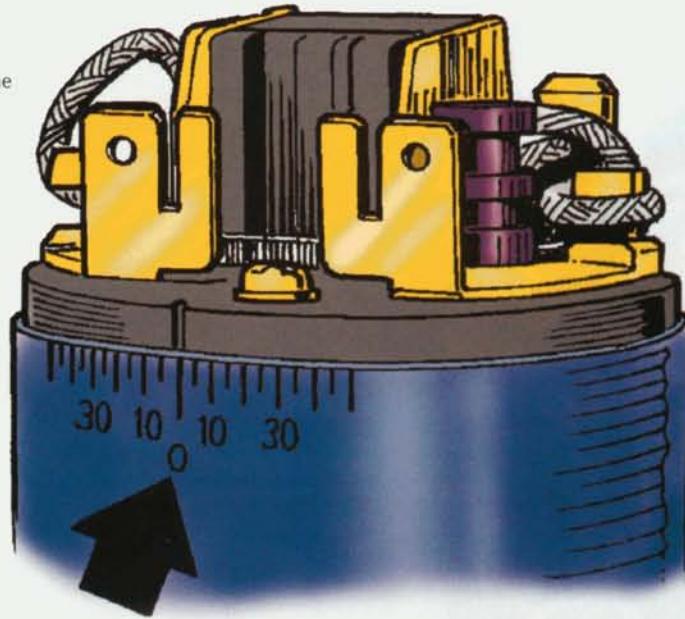
BY DEREK BUONO • ILLUSTRATIONS BY JIM NEWMAN

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at *Radio Control Car Action*, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606, USA. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

Improperly Adjusted ESC

I just installed the electronics in my Losi Double-XT and put in a slightly used Reedy Pulse R 12x2, and it's going slower than it did before with the stock motor. I've checked everything, but I can't figure it out. What happened? [email]
 BOB DAVIDSON

Your 12-turn should definitely be faster than any stock motor. You'll have a problem, however, if you installed a new modified motor and left the same size pinion that you used with the stock motor. This leads to major overgearing and can make the motor seem slow. Refer to the manual for the pinion that is recommended for the motor you installed. Be sure that the motor is not undergeared because this will also cause it to run hot and to be inefficient. The next thing I would check is the motor's timing. If the motor has timing marks, check to see that it is at or to the right of the 0-degree mark. Never set your motor to negative timing! If there are no timing marks on the can, Fantom and Racetech make motor-timing jigs that you can use to make sure the motor is set properly (between 0 and 20 degrees should be OK).

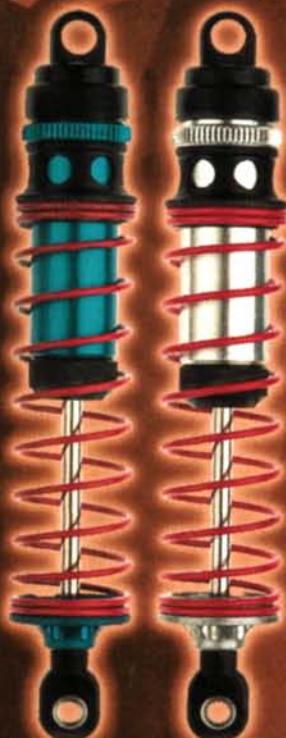


New Traxxas Aluminum Shock Components Work With Your Stock Parts!

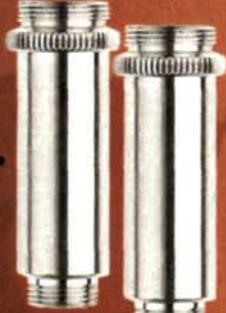
T-Maxx Blue Shock Bodies



CNC machined, blue anodized aluminum shock bodies, sold in pairs. RRP 8511



T-Maxx Silver Shock Bodies



CNC machined, natural silver aluminum shock bodies, sold in pairs. RRP 8510

Blue Lower Spring Retainers



Machined, blue anodized aluminum retainers, sold in pairs. RRP 8516

Aluminum Upper Spring Retainers



Machined upper spring retainers, sold in sets of 4: RRP 8530 8mm, RRP 8520 4mm

48P Absolute Series Pinons



Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on/off noise is gone! Available in 48P in 16T thru 26T sizes. RRP 1416 - RRP 1428

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

RRP

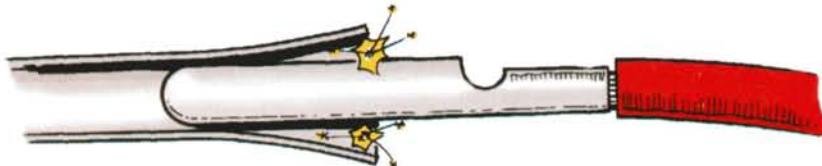
High-Resistance Connectors

I recently upgraded my stock 540 motor to a Trinity Speed Gem Onyx (14-double). Now my battery connectors get really hot, and sometimes I have trouble getting them apart. Did I do something wrong? [email]

DOUG HENRY

The faster motor you installed is drawing more amps than the previous one did. A poor connection usually is the first thing to get hot. The stock Tamiya-style connectors on most batteries work well for lower-amp-draw applications (such as stock-motor use), but they have too much electrical resistance for a mod like your Onyx. The connectors tend to loosen and get dirty, and that increases resistance and causes them to get hot.

You could squeeze the female pins together with needle-nose pliers for a tighter fit. This will work until they expand again. The better solution is to upgrade the connectors to a Deans or Sermos-style connector (sold by DuraTrax, Acer Racing, and others). These connectors have resistance equal to or less than the wire that is attached to them and can handle higher-amp-draw applications.



1999 World Cup and National Champion

"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton

www.robinsonracing.com

T-Maxx Aluminum Brake Kit



New, lightweight aluminum variable braking system, includes bigger, aggressive brake pads and backing plate. RRP 8560

Rustler/Stampede/Bandit/Sport Nitro/Electric Sun Gears

CNC Machined from a from bar stock, these hardened, Sun Gears will last longer in your Traxxas machine. RRP 8500

T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 8551 Blue, RRP 8550 Natural Silver

Hardened Steel Spur Gear With Ball Bearing



Precision CNC machined from solid steel, and then hardened, these spurs will last and last. RRP 8572 T-Maxx and Nitro Rustler, RRP 8565 Nitro Stampede

ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937

Troubleshooting



Foamy Fuel

I have a Losi NXT, and my fuel becomes very foamy when I give it throttle. Does this cause any problems? How can I fix this? [email]

BRYAN COLE

Because air gets mixed into the fuel and because the engine is constantly vibrating, there is no way to prevent fuel from foaming. Some fuels, such as Trinity Monster Horsepower, have special additives to reduce foaming. A little foaming won't affect engine performance, but air bubbles in the fuel line could cause the engine to run too lean. If there is an abundance of air in the fuel line, check to see whether the tank is cracked. Lots of air in the fuel line probably means that there is an air leak somewhere in the tank or the line. Replace the fuel line and/or fuel tank if you discover any faults.

If there is nothing wrong with the tank and/or fuel line, then vibration is probably the culprit.

You can reduce foaming caused by vibration by isolating the fuel tank as much as possible from the chassis. Most tanks are mounted on or suspended by rubber grommets. Make sure the screws are loose enough to allow the tank to move slightly. Another cause of excessive foaming is high exhaust pressure. Check to see whether the stinger is clogged; if it is, exhaust will be directed into the tank. You can also reduce also the exhaust pressure by using a longer pressure line. You can't get rid of the foaming completely, but you can reduce it.

RS4 Nitro Aluminum Brake Kit



Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



Aluminum vented flywheels move air over clutch bell, improving performance and cooling.
RRP 1570
RRP 1571 Pull Start

Stealth Sedan Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any HPI electric car or truck.
RRP 1860 thru RRP 1896.

RS4 Nitro Small Aluminum Drive Pulleys



Hardened drive pulleys, sold in pairs.
RRP 1538

RS4 Top Shaft Pulley



One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on.
RRP 1527

RS4 / Pro / Pro2 / Nitro Aluminum Outdrives



40% lighter than stock ball diff outdrives.
RRP 1585

RS4 Complete Ball Diff Units



Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley.
RRP 1590 Electric
RRP 1595 Nitro

RS4 Diff Pulleys



Precision machined, hard anodized aluminum diff pulleys.
RRP 1539 nitro sedans
RRP 1528 electric sedans

RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that's tougher than the stock gear and will last longer.
RRP 1535

www.robinsonracing.com

RS4 Nitro 32 Pitch Conversion Kit is available. RRP 1536

Leaking Differentials

I just purchased a Nitro OB-4, and every thing went together well, except I can't get the differentials to stop leaking. What can I do to stop that?

DAVE TAYLOR
Miami, FL

The OB-4 includes a gasket to seal the differentials. Most of the time, it seals the diffs up tight. Sometimes, however, the gasket is deformed and cannot create a perfect seal, usually because it hasn't been installed correctly. Check that it isn't pinched or broken and that it is as nearly round as possible. It's a good idea to buy another set of gaskets and double them. By layering them, you get a better seal, and they are less likely to leak. If the diffs still leak, carefully apply some automotive gasket sealant to the inside ring of the diff. Be sure not to get any inside the diff. When you tighten the diff screws, don't overtighten one side, or the diff housing will deform. Your diffs should be leak-free after that. ■



RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

www.robinsonracing.com

Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and hardened for super quiet precision and extra long life. Jamin' tranny grease is included. RRP 2213 RC10-GT, RRP 7505 Ultima GP-R

Associated Titanium Stealth Top Shaft



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

Hardened Diff Gear



Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT RRP 7500 Ultima GP/EP-R

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated, RRP 7515 Kyosho Ultima



40% lighter than stock ball diff outdrives. RRP 1475 TC3, RRP 1502 B3/T3



TC3 Ultra 48 Pitch Spurs



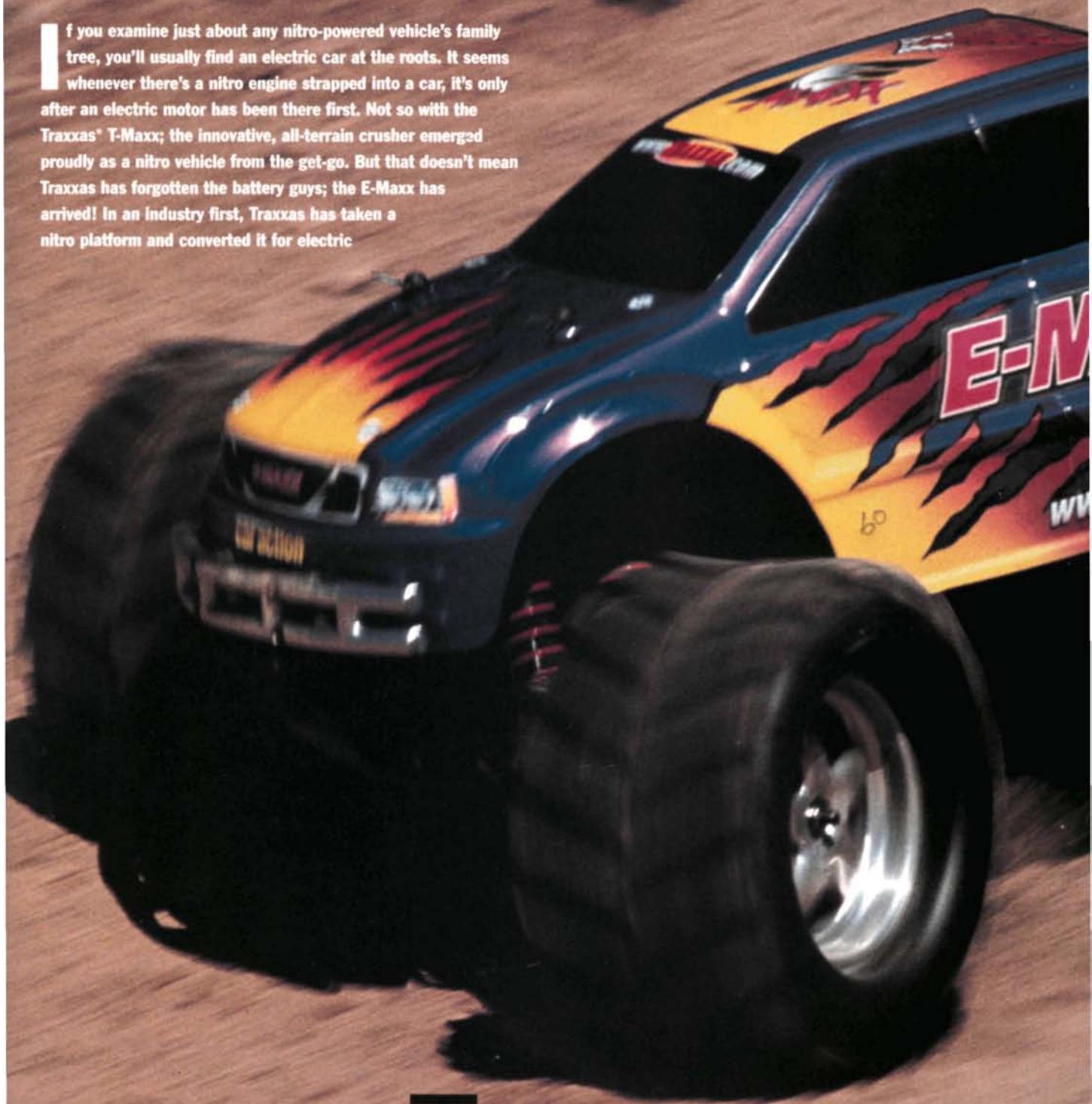
Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T, RRP 1670 - RRP 1680.

ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937

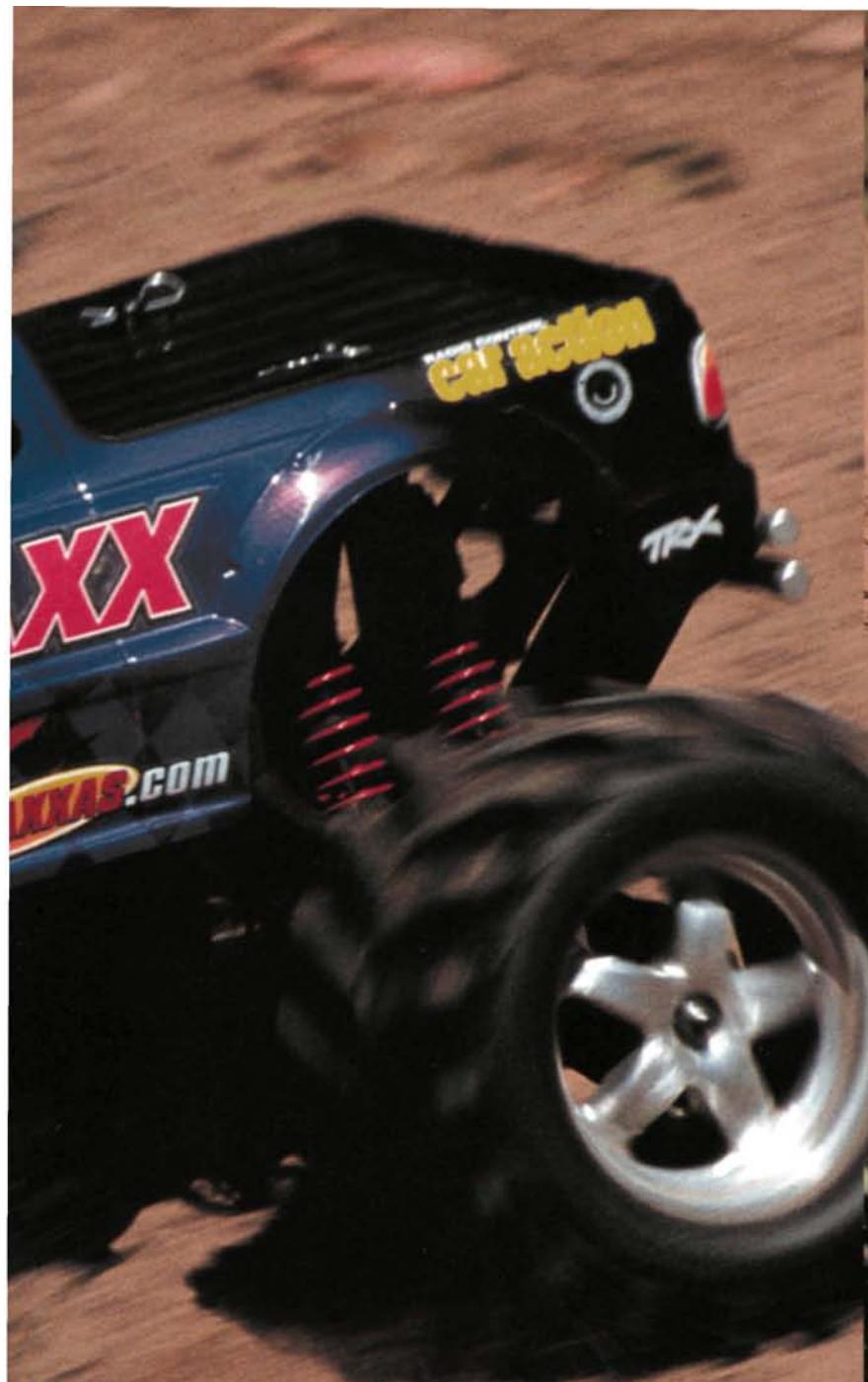


If you examine just about any nitro-powered vehicle's family tree, you'll usually find an electric car at the roots. It seems whenever there's a nitro engine strapped into a car, it's only after an electric motor has been there first. Not so with the Traxxas® T-Maxx; the innovative, all-terrain crusher emerged proudly as a nitro vehicle from the get-go. But that doesn't mean Traxxas has forgotten the battery guys; the E-Maxx has arrived! In an industry first, Traxxas has taken a nitro platform and converted it for electric



Traxxas E-Maxx

by Peter Vieira



The
biggest
thing to
hit nitro
goes
electric

power. But then, maybe "converted" isn't the best word. While the E-Maxx does use the exact same suspension, wheels and tires as its nitro-burning brother, it's hardly a half-baked let's-just-bolt-in-a-motor project; Traxxas has engineered a well-thought-out "next step" in electric monster trucking. See if you agree.



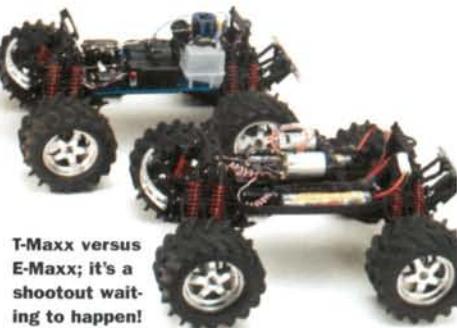


• **Chassis.** Traxxas built an all-new chassis specifically for the E-Maxx's electric-power needs. The plastic semi-tub holds two 6-cell batteries, one along each side of the chassis. You can use stick packs or side-by-side cells, thanks to the slotted battery trays and the reversible plastic straps that hold the packs in place. When using side-by-side cells, the scalloped sides of the straps holds each cell firmly; for stick-pack use, the straps are flipped over so their smooth backs contact the batteries.

Stiffening ribs are molded into the chassis for extra strength, and the ribs also compartmentalize the chassis for the various electronic components that fit onto it. But the biggest compartment is reserved for the most important part of the E-Maxx:

the transmission. More on that later.

The rest of the chassis parts, including the bumpers, skidplates and ladder bars, are all standard T-Maxx parts, but there is a little something new on the E-Maxx that will carry over to the T-Maxx. The electric truck has metal-reinforcing plates for both front and rear skidplates; the T-Maxx had just one (up front). Both trucks



T-Maxx versus E-Maxx; it's a shootout waiting to happen!

will have the dual plates. Likewise, both trucks will also get molded plastic bulkhead supports that join the left and right bulkheads where the bumpers attach. They weren't installed on the prototype truck, but they will appear on production models.

• **Tranny.** Here's where Traxxas went into creative overdrive. Although not the first monster truck to put two motors on the chassis and link them to the axles via drive shafts (the Tamiya Juggernaut did it first), the E-Maxx is first with a much more compelling feature: shift-on-the-fly capability.



The E-Maxx has all the ground clearance and suspension travel of a T-Maxx. Those eight shocks have more absorbing power than a case of Bounty!



Traxxas keeps the power possibilities wide open by slotting the chassis for side-by-side packs. From the underside, you can see the heavy-duty steering servo that is identical to the one supplied with the T-Maxx.

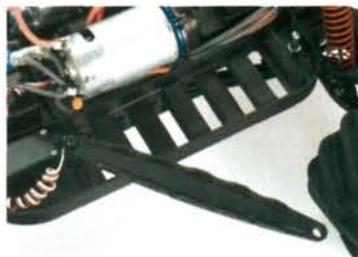
Since the motors can simply spin in reverse to back the E-Maxx out of trouble, the T-Maxx's mechanical reversing system was not needed. That left the 3-channel Traxxas Qualifier radio system free to operate a shifter servo. By flipping the rocker switch on the radio, the E-Maxx is instantly shifted from stump-pulling, wheelie-popping low gear to a fast-running high gear that moves the truck along at a faster clip than any other stock electric monster. Flip the switch again, and you can downshift at will to slow the truck and get ready for the next torque-heavy challenge.

As you can see in the photos, two motors spin a common spur gear that is equipped with a slipper clutch. You'll also notice the gears are 32-pitch; the E-Maxx is a heavy piece of hardware, and Traxxas wants to be sure that heft won't pop any gears when folks start jamming on the gearbox and slamming the truck into reverse. Should you wish to swap spur gears and don't have Traxxas parts handy, any multi-hole spur gear will fit (and yes, you could go to finer pitch gears if you like, but 32-pitch seems like the hot setup for this rig).

- **Electronics.** Don't let the plain-looking silver motors fool you; the E-Maxx has some specialized stuff in the electronics department. The production E-Maxx will have 12V



Here it is: the heart of the E-Maxx. This tower of power has a full set of bearings inside as well as a 2-speed transmission. As you can see, a slipper clutch is part of the package.



The battery strap can be flipped for side-by-side packs; right now it's in stick-pack mode.

550 motors—larger than the 540s we're used to but with the same mounting hole pattern. That means the E-Maxx will accept aftermarket motors, but hold your horses; the E-Maxx's power system has been specially designed for monster-truck duty, and the motors are part of the system. Or at least they will be; Traxxas hasn't finalized what wind the dual 550 modifieds will have. But they will be internally cooled, thanks to fans mounted directly on the armatures. According to Traxxas, the fanned 550 motors will operate at about 20° over ambient temperature no matter how hard you

push them. Compared to the frying-hot temperatures most of us encounter with single-motor, 6-cell systems, that's downright chilly.

The specialized stuff doesn't stop there. Traxxas has toolled up an all-new ESC just for the E-Maxx. Sure, there are off-the-shelf ESCs that can handle a pair of motors, but the E-Maxx doesn't just have two motors; it has two battery packs. More important, those packs are wired in series. That means the E-Maxx is pumping 14.2 volts into the motors. That's a lot of power, especially when you

consider that the motors are wired in parallel, so they both spin at maximum rpm. This setup requires the ESC to pump a lot of juice, and the new ESC is built just for that type of



The Johnny Cash black-on-black ESC is just a prototype; the production version will be called the VX12 and will have blue-anodized heat sinks. The connectors have gold pins inside for minimum electrical resistance.



According to Traxxas, the fans inside the motors only warm up to about 20° over ambient temperature even under the hardest use. The motors will wear "Titan" labels in production form. The Titans were a mythological race of giants—good name!

Specifications

SCALE 1/10

DIMENSIONS

Wheelbase 12 in. (305mm)

Width 14.8 in. (375mm)

CHASSIS

Type Molded semi-tub, slotted

DRIVE TRAIN

Type Gearbox with manual 2-speed

Primary Spur gear/dual pinions

Transmission ratios 2.77:1 (1st)

1.77:1 (2nd)

Drive shafts Telescoping universal

Differentials Planetary gear

Slipper clutch Steel disc w/Rulon slipper pegs

Bearing type Rubber sealed ball bearings

SUSPENSION

Type Independent double wishbone

Damping Oil-filled, coil-over shocks (2 per wheel)

WHEELS

Type One-piece, molded 5-spoke

TIRES

Type Chevron tread with foam inserts

ELECTRONICS (INCLUDED)

Transmitter Traxxas Qualifier

3-channel

Steering/shifter servos Traxxas

Motors Traxxas 550 modifieds (2)

Speed Control Traxxas high-voltage

Returning T-Maxx features

In case you aren't familiar with the T-Maxx's features (which makes you some kind of recently thawed cave dweller, a MIR cosmonaut, or a convict fresh out of solitary), here's a list of the major T-Maxx features that are shared with the E-Maxx:

- Eight oil-filled, coil-over shocks (two per wheel).
- Pivot-ball front and rear hubs with fully adjustable front and rear camber and toe-in.
- Extra-long front and rear, upper and lower suspension arms.
- Telescoping universal drive shafts.
- Heavy-duty metal-gear differentials with ring-and-pinion drive.
- Satin-finish front and rear bumpers with skidplates.
- Satin-finish wheels with foam-supported paddle tires.
- Full ball-bearing set.
- Factory assembled with installed Traxxas radio system.



WE DRIVE IT!

Although our "First Look" E-Maxx's electric-specific parts were hand-built prototypes, all the suspension parts were production T-Maxx items. As such, we were allowed to pound on the truck with relative impunity. Traxxas did ask us to take it a little easy on the tranny since it was full of irreplacable, custom-machined parts, but we kind of forgot about that once we started running it. I sure am glad we didn't break it! Here are the highlights of our test-beating:



It's fast!

Our E-Maxx prototype topped out at 24mph in second gear; that's quick for any electric off-road RC car and ballistic for a vehicle as large and heavy as the E-Maxx. Run times were shortened by constant high-speed running (we averaged about 6 minutes with 2000mAh packs), but we experienced nearly double the run time when we drove the E-Maxx in its off-road element, where most of the driving is done with partial throttle or in first gear.



Watch out for wheelies!

If you're a wheelie man, you'll love the E-Maxx. It doesn't just lift its front wheels—it rockets them into the air. If you peg the throttle in first gear, the E-Maxx will flip onto its roof. Even as the batteries flatten out, the E-Maxx easily pulls wheelies. You can avoid this with

throttle control, but for full-clamp, drag-style launches without wheelies (or with more controllable wheelies), you can always loosen the slipper clutch.



Shifting on-the-fly is definitely the way to go.

... but it doesn't work exactly as you think. The gear-change toggle doesn't instantly slam the truck into second gear when you flip it. You have to let off the throttle just slightly to make the shift, then it does so seamlessly; in fact, you would never know the shift was made were it not for the telltale surge in speed and higher-frequency hum from the tires. Instead of coordinating a lift-throttle/flip-toggle sequence to shift into second, we simply hit the switch for second, stayed on the gas until we were ready for second gear, then lifted when we wanted the tranny to switch. When downshifting, the E-Maxx does drop into low gear as soon as you flip the toggle, and this scrubs off a lot of speed—just like engine-braking in a full-size car.

It handles like a T-Maxx.

And why shouldn't it? It has all of the nitro truck's suspension parts. Competitive types are dialing in stiffer setups to get the T-Maxx around a racetrack, but for all-around fun, the long-travel, pillow-soft settings make the E-Maxx stick to the ground like hot Jujubes. We had no trouble scaling anything short of just about vertical.

It's just as much fun in reverse.

The E-Maxx has just as much grunt in reverse as it has in forward. Whatever the truck can climb in forward, it can also climb going backward. It even does wheelies in reverse, and the tranny will shift in reverse. The prototype ESC our truck was equipped with had very little deadband, and it was easy to hit reverse when returning the trigger to neutral. This would make the E-Maxx endo hard, but we got used to it after a minute or so. Production ESCs will have a brake function to slow the truck before grabbing reverse.

abuse (by the way, the E-Maxx power system could turn up as an aftermarket kit for other dual-motor electric monsters, such as the Tamiya Clod Buster and Juggernaut and Kyosho USA-1). One thing the ESC doesn't have is a brake; it's forward-neutral-reverse only, and downshifting serves as braking. The pictured ESC is a prototype, which explains its labelless, hand-machined plastic case. The motors and ESC will undoubtedly have powerful-sounding names and good-looking graphics by the time the E-Maxx is ready for production.

Traxxas' own radio gear completes the electronics package. A 2018 servo

shifts the transmission, and the same 2055 heavy-duty steering servo from the T-Maxx points the E-Maxx's wheels. Likewise, the 3-channel transmitter is identical to the T-Maxx's.

- **Body.** To help differentiate the E-Maxx from the T-Maxx, the electric truck sports a new crew-cab body. The T-Maxx body will fit the E-Maxx, and aftermarket T-Maxx bodies will fit as well. E-Maxxes will roll off the assembly line with Traxxas ProGraphix factory-finished bodies, which should look much like the truck shown here. The truck pictured on the cover was painted by Greg

INSIDE THE E-MAXX: We talk to designer Brent Byers

No RC vehicle is the work of just one person, but there is always a key engineer whose skill and expertise are the foundation of the project. For the T-Maxx and E-Maxx, that engineer is Brent Byers. I asked Brent for some insights on the development of the Maxx trucks; here's what he had to say:

Radio Control Car Action: When you designed the T-Maxx, were there any decisions made with an eye toward an electric version you knew would follow, or was it designed purely as a nitro vehicle?

Brent Byers: We designed the T-Maxx as a nitro vehicle from the start, but certainly in the back of my mind, toward the end of the project, I knew that it would be a good candidate for some sort of special electric power system.

RCCA: There are plenty of well-proven electronics, batteries and motors available, yet you decided to try something entirely new with dual 550 motors and 14.4-volt power. What was the reason for going to such a radically different setup?

BB: We have some very strong feelings about why we did it and why we're doing it. We feel the high-voltage system is, in fact, a better way to power an RC vehicle. We are very much flying in the face of convention and, to a certain extent, risking the E-Maxx being as well accepted as it might be with a more familiar electronics package. But the theory behind running at higher voltage with lower current is very sound, and it's backed up by many other industries. You will soon see full-size automobiles going to high-voltage electrical power systems, probably of at least 24 or 48 volts for the purpose of efficiency, with lighter wires and operating at reduced current levels. We knew we were big enough and strong enough to develop the necessary power train and that because of its advantages, we believe other people will be willing to jump in and let technology progress in this arena.

RCCA: How does the system work?

BB: Basically, electrical power is defined as volts times amps, and the resulting power unit is watts. We've doubled the voltage by doubling the number of cells (12 versus 6), but we've also cut the cur-

rent (amps) roughly in half. What we get by reducing the current to a much lower level is increased efficiency; the cells' internal resistance doesn't create as much heat. The same goes for the motors; right off the bat, they're roughly 10 to 15 percent more efficient when operated at a higher voltage. We can then take the energy we're saving and apply it to enhanced performance and increased run time. That's the basic theory.

RCCA: Are you saying the dual 550 motors draw less amperage together than a single motor of equal power, or each 550 draws less amperage than a similarly powerful conventional 540-type RC motor?

BB: When I say that the motors draw roughly half the current, I'm speaking in general; you can't really compare the E-Maxx's motors to something off the shelf. When the truck is running, each motor is drawing relatively low current. When accelerating hard or going from forward to reverse, peak current values can be quite high because there are two motors, and they are in parallel with higher voltage going to them, but the benefit is pretty potent torque. Basically, the truck will perform almost as well on one motor as it does on two, under normal circumstances, but it won't have the same pulling power and the single motor won't dissipate heat as well as two motors. When you really load the truck down, however, the second motor becomes apparent. You're clearly able to put a lot more power down—without burning up anything.

RCCA: How would the E-Maxx fare with a traditional 6-cell, "low voltage" electronics package?

BB: You would have increased motor and battery heating and less run time for an equivalent performance level. You have a certain amount of power coming out of the batteries, and a lot of that power is lost as heat; I'm sure you're familiar with batteries getting quite hot. All that energy is going into the atmosphere as heat, when that energy could be going to the tires to propel the vehicle. If somebody just didn't want to run the high-voltage system, he could install any existing electronics and the E-Maxx would run, but not as efficiently. Knowing that people would want to install some pretty wild power combinations, we designed the transmission to accommodate a huge range of gear ratios, all the way from 50:1 to about 19:1. We designed the E-Maxx to be able to handle the power output of the latest exotic brushed-cobalt and brushless motors.

INSIDE THE E-MAXX

RCCA: Was a driver-shifted transmission one of the original design goals, or were there plans to include a T-Maxx-style automatic transmission?

BB: We had plans to do a centrifugal-style 2-speed and went completely through the development process with a transmission that would allow forward, reverse and braking through the 2-speed transmission. Typically, a centrifugal 2-speed freewheels in reverse, so we developed a rather elaborate transmission that got around that and still allowed the motors to do the braking—taking advantage of regenerative braking—and also allowed the motors to do the reversing function. But what we didn't like in testing was the effect of the fairly wide variation in voltage output from battery pack to battery pack; some people run inexpensive sport packs, and others use high-dollar voltage-increased cells, and the truck's speed is directly proportional to the voltage of the battery packs. Since a centrifugal transmission relies on the ability of the motors to spin the transmission up to a certain rpm to make the system shift, and the ability to reach that rpm depends on pack voltage, we discovered that different battery packs would alter the shift point fairly dramatically because their voltages varied. Even if you could guarantee the user's packs would all have the same voltage, the discharge characteristics of the battery would affect the shift point. When the pack is fresh, the truck would shift very early, but as the pack discharged, it would shift very late or not at all. We determined we

could build a manual transmission that was quite a bit simpler and more efficient and that would allow the driver to shift whenever he liked.

RCCA: The E-Maxx includes a proprietary, high-voltage speed control. How big a challenge was it to develop?

BB: It wasn't a particularly big challenge to engineer the speed control. It's a fairly simple ESC; it's not programmable, or anything; it's just designed for higher voltages. It's our first ESC to use surface-mount technology, and it contains a few special things that I don't want to reveal, but otherwise it's similar to other ESCs.

RCCA: The E-Maxx is just about finished; you've tested it, you know what it can do. Is it everything you hoped for?

BB: It's pretty much where we wanted it. It was very well thought out, and all the calculations were done even before we built the first prototypes. We wanted to have the world's most powerful, fastest electric monster truck. We wanted something that could excite us even after playing with nitro-powered T-Maxxes. We wanted to build a truck that is better, and not get stuck in a rut by doing things in a particular way just because that's the way they had always been done. We started on a clean sheet to see what we could do. With E-Maxx, we have opened the door to new levels of RC performance.

Vogel and does not represent the style of finish production trucks will have—unless you paint one yourself—a possibility, since Traxxas will offer clear replacement bodies.

THE VERDICT (SO FAR)

For a lot of electric-power diehards (no pun intended), the only thing not to like about the T-Maxx is that it was only offered as a nitro truck. Well, now there's nothing not to like! The E-Maxx offers all the convenience of electric power without compromising the performance of the nitro version. With only a few obvious exceptions, all the T-Maxx and E-Maxx parts are interchangeable, and that means all the T-Maxx hop-ups will fit the E-Maxx (except for engine mounts, exhaust manifolds and other nitro-necessary items, of course). Is the E-Maxx better than the T-Maxx? If you prefer battery power to fuel power, it's definitely better!

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

HobbyTown USA[®]

Where Hobbies Begin!™

**Nitro Power 7.2V 1400Mah
Battery Pack**

**HTU Price
\$17.99**
Reg. \$25.99
NTPR72



Availability and Participation May Vary. See Store for Details. Not Valid With Other Discounts, Coupons, Offers, or "Our Price" Sale Items. Coupon Must Be Presented To Receive Discount. Limit One Coupon Per Person. Expires 12/31/00.

Traxxas Nitro Sport Ready-to-Run

**HTU Price
\$234.99**
Reg. \$430.99
TRA4510



Availability and Participation May Vary. See Store for Details. Not Valid With Other Discounts, Coupons, Offers, or "Our Price" Sale Items. Coupon Must Be Presented To Receive Discount. Limit One Coupon Per Person. Expires 12/31/00.

Auburn, AL	(334) 826-8216	Lawrence, KS	(785) 865-0883	Columbus, OH	(614) 777-9307
Mobile, AL	(334) 633-8446	Overland Park, KS	(913) 649-7979	Mentor, OH	(440) 946-5584
Gilbert, AZ	(602) 892-0405	Wichita, KS	(316) 683-7222	Southpoint, OH	(740) 894-6303
Phoenix, AZ	(602) 598-5282	Lexington, KY	(606) 277-5664	Strongsville, OH	(440) 846-1770
Tucson, AZ	(520) 882-8888	Louisville, KY	(502) 254-5755	Norman, OK	(405) 292-5850
Fayetteville, AR	(501) 571-3730	Owensboro, KY	(502) 688-9080	Clackamas, OR	(503) 652-5899
Little Rock, AR	(501) 223-5155	Bellingham, MA	(508) 966-3559	West Chester, PA	(610) 696-9049
Brea, CA	(714) 990-9652	Easton, MD	(410) 820-9308	Charleston, SC	(843) 769-5808
Chino, CA	(909) 591-9958	Frederick, MD	(301) 694-7395	Columbia, SC	(803) 407-2373
Chico, CA	(530) 899-2977	Glen Burnie, MD	(410) 590-4950	Greenville, SC	(864) 627-9633
Fresno, CA	(209) 435-3342	Ann Arbor, MI	(734) 996-2444	Sioux Falls, SD	(605) 339-6613
San Marcos, CA	(760) 739-0672	Iron Mountain, MI	(906) 779-0494	Chattanooga, TN	(423) 877-9885
Co. Springs, CO	(719) 531-0404	Traverse City, MI	(616) 929-5615	Franklin, TN	(615) 771-7441
Co. Springs, CO	(719) 637-0404	Columbia, MO	(573) 817-0698	Germantown, TN	(901) 757-8774
Fort Collins, CO	(970) 226-3900	Kansas City, MO	(816) 459-9590	Knoxville, TN	(423) 690-1099
Longmont, CO	(303) 774-1557	St. Louis, MO	(636) 394-0177	Murfreesboro, TN	(615) 890-6777
Westminster, CO	(303) 431-0482	Brooklyn Park, MN	(612) 424-6052	Nashville, TN	(615) 851-2400
New Milford, CT	(860) 355-3000	Minnetonka, MN	(612) 470-7474	Clarksville, TN	(931) 221-0012
Brandon, FL	(813) 655-6366	Jackson, MS	(601) 957-9900	Arlington, TX	(817) 557-2225
Miami, FL	(305) 273-7803	Tupelo, MS	(662) 690-6030	Austin, TX-South	(512) 440-7877
Ormond Bch., FL	(904) 72-5441	Boone, NC	(828) 265-3367	Austin, TX-North	(512) 246-8904
Tallahassee, FL	(850) 671-2030	Charlotte, NC	(704) 544-2303	Lewisville, TX	(214) 488-0980
Augusta, GA	(706) 585-5003	Raleigh, NC	(919) 790-5324	Fort Worth, TX	(817) 263-1196
Columbus, GA	(706) 660-1793	Wilmington, NC	(910) 256-0902	Plano, TX	(972) 758-7875
Kennesaw, GA	(770) 426-8800	Winston-Sal., NC	(336) 774-2324	San Antonio, TX	(210) 829-8867
Macon, GA	(912) 474-0061	Grand Forks, ND	(701) 746-0708	Taylorsville, UT	(801) 964-8242
Statesboro, GA	(912) 489-8700	Grand Island, NE	(308) 382-3451	Virginia Beach, VA	(757) 464-4140
Ames, IA	(515) 232-9060	La Vista, NE	(402) 597-1888	Lynnwood, WA	(425) 774-0819
Cedar Rapids, IA	(319) 364-3289	Lincoln, NE	(402) 434-5056	Redmond, WA	(425) 558-0312
Council Bluffs, IA	(712) 329-8888	Norfolk, NE	(402) 371-2240	Tacoma, WA	(253) 474-7787
Davenport, IA	(319) 355-2071	Omaha, NE	(402) 498-8888	Tukwila, WA	(206) 575-0949
Boise, ID	(208) 376-1942	Plaistow, NH	(603) 382-6583	Brookfield, WI	(414) 782-4332
Geneva, IL	(630) 208-9062	Westfield, NJ	(908) 654-6525	Delafield, WI	(262) 646-5755
Machesney Pk., IL	(815) 282-0727	Rio Rancho, NM	(505) 994-8874	Green Bay, WI	(920) 490-9998
Naperville, IL	(630) 778-8707	Carson City, NV	(702) 883-5475	Mequon, WI	(262) 241-1862
Oak Park, IL	(708) 445-8056	Las Vegas, NV	(702) 889-9554	Koshkosh, WI	(920) 466-1840
Evansville, IN	(812) 477-7200	Albany, NY	(518) 435-9961	Sheboygan, WI	(920) 452-0801
Indianapolis, IN	(317) 845-4106	Amherst, NY	(716) 833-7700	Cross Lanes, WV	(304) 776-7259
Merrillville, IN	(219) 736-0255	Cincinnati, OH	(513) 697-8224		

www.hobbytown.com

more specials at www.hobbytown.com and inside our Hobby Outlook Magazine • franchise headquarters (800) 858-7370



Yokomo GT-4W

Yokomo's nitro touring hardware gets serious

by Derek Buono

Yokomo[®] made its first venture into nitro touring with the GT-4 platform, which was essentially a converted version of its then-new YR-4 electric car. Nitro touring cars of any type were a rarity in the mid-90s, so without any other cars to compare it with, the Yoke was as good as nitro touring got. Since then, the nitro touring class has exploded with a variety of competitive machines from HPI, Kyosho, FSR, OFNA and Tamiya, and the very latest nitro touring efforts from Mugen and Serpent have taken the technology to even higher levels of performance. Although Yokomo took its time producing a follow-up nitro car, it appears the time was well spent; the all-new GT-4W looks like a pure racing machine that's capable of taking on all comers.

New Yokomo engine

The GT-4W is available with Yokomo's RX-12 series engine. The engine features 10mm-diameter crankshaft, a chrome-plated sleeve for extended engine life, double-bushing alloy connecting rod, SG shaft for quick clutch assembly and a machined heat-sink head for increased cooling. The slide carb has a short throw from idle to full throttle. The engine arrived too late for in-car testing but will be installed for future competition; look for an update on the RX-12-powered GT-4W in a future issue.



DATA CENTER

VEHICLE TYPE $\frac{1}{10}$ -scale, nitro-powered 4WD competition touring car

BEST BUYER Experienced racer looking for top-of-the-line performance

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Good

Parts fit and finish Good

Durability Very good

Overall performance Very good

SPECIFICATIONS

SCALE $\frac{1}{10}$

LIST PRICE \$499 (\$680 w/RX-12 engine)

DIMENSIONS

Wheelbase 10.3 in. (258mm)

Width 7.9 in. (198mm)

WEIGHT

Total, as tested 61 oz. (1,733g)

CHASSIS

Type Double deck

Material (upper/lower) Molded plastic/3mm aluminum

DRIVE TRAIN

Type Triple-belt 4WD

Transmission 2-speed cam-type

Drive shafts Steel dogbones

Clutch type 3-shoe

Clutch-bell type Ball bearing

Brake type Steel disc

Bearing type Metal shielded

Final drive ratio 6.1:1 (first), 4.73:1 (second)

Differentials Four-gear planetary

SUSPENSION (F/R)

Front A-arm

Rear (upper/lower) A-arm/H-arm

Shock material Composite

Rear toe-in angle Adjustable

Caster adjustments Caster clips (3)

Swaybars Rear

WHEELS

Type 12-spoke

Dimensions (DxW) 2x1 in.

TIRES

Type Radial treaded

ENGINE AND ACCESSORIES

Engine (not included) O.S. 12 CV-R

Pipe Paris Turbo Ring (not included)

A dual-chamber plastic pipe is included with the kit but was not available for testing.

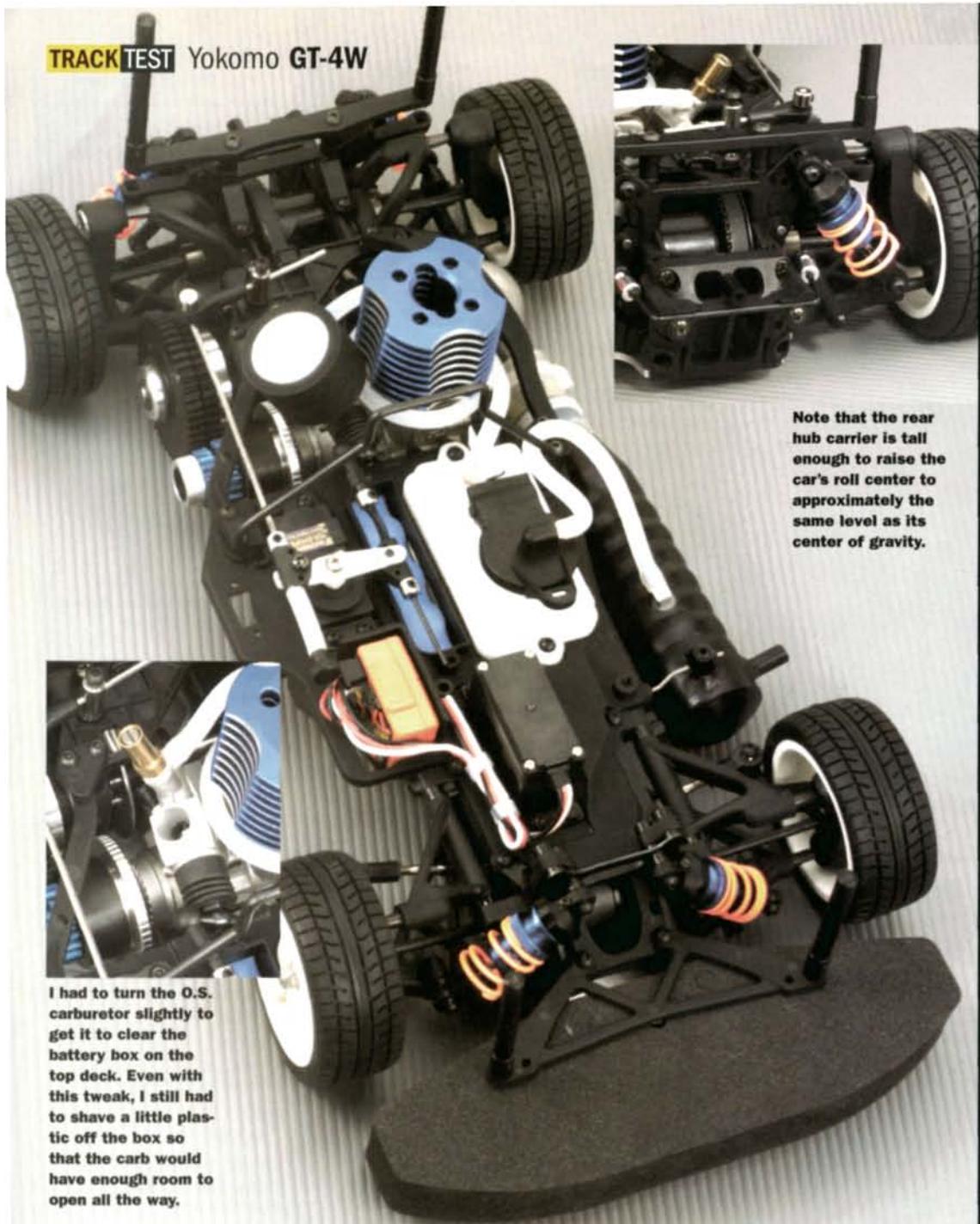
LIKES

- Highly adjustable pivot-ball suspension.
- Dual chassis braces that span from the upper deck to the rear bulkhead to stiffen the engine area.
- Aluminum shifter housing on the 2-speed tranny.
- 3mm chassis with large openings to reduce weight.

DISLIKES

- Differentials are not sealed.
- Plastic shocks. Although they worked well, a pro-caliber kit deserves aluminum shocks.
- Radio tray is not easy to remove.

TRACK TEST Yokomo GT-4W



I had to turn the O.S. carburetor slightly to get it to clear the battery box on the top deck. Even with this tweak, I still had to shave a little plastic off the box so that the carb would have enough room to open all the way.

Left: check out the 2-speed's aluminum housing. Many other touring cars have plastic housings that tend to break with hard shifting, but Yokomo's 2-speed should hold up over long haul.

Right: the ample width of the suspension arm's base reduces the load to which the arm is subjected; this in turn, reduces suspension-component wear.



YOU'LL NEED ■ 2-channel radio ■ Steering servo ■ Throttle servo ■ 5-cell receiver pack ■ Engine (non-pull-start) ■ Starter box ■ Glow starter ■ Body ■ Polycarbonate-compatible paint ■ Fuel ■ Tire glue ■ Thread-locking compound

FACTORY OPTIONS ■ Wide bumper—ZE-001L ■ 15x10mm Teflon-sealed bearings—BB-1510T ■ Front anti-roll bar—ZE-412F ■ Titanium-nitride-coated shock shafts—YS-53S-4T ■ Aluminum ball shock-cap ends—YS-8B ■ Ti turnbuckles—ZC-TB35 (35mm), ZC-TB42 (42mm), ZC-TB48 (48mm), ZC-TB52 (52mm)

building & setup tips

Although it's brand-new, the GT-4W manual was already sprinkled with addenda, so I made it a point to note which steps have been revised before I started wrenching; you should do the same. Aside from that minor annoyance, the instructions were fairly well laid out, but some steps are a little tricky. Pay extra attention to the following:

Front shock-tower brace. The instructions call for the brace to be installed over the shocks. This interfered with access to the front shocks, so instead, I installed the brace next to the shock tower.

Differential. Be sure to pack the diffs with grease, as they are unsealed and cannot be filled with silicone fluid. You must also periodically check the diff to see whether it needs more grease. As the gears displace the grease, its effect on diff action is reduced.

Engine installation. I used an O.S. CV-R with a slide carb. The instructions say that you may have to remove some of the radio tray to allow the slide to fully extend. I rotated the carb to clear the upper deck as much as possible, but I still had to remove part of the radio tray for the carb to open all the way.

Pivot-ball retainer installation. The aluminum retainers that cap the pivot-ball sockets are difficult to thread in when dry, so I made the job a little easier by applying a little silicone grease.

SETUP

Shocks. The plastic shocks included with the kit worked very well in the parking lot, and I bet they'll work on the track, too. But before I hit the track, I picked up a full set of Yokomo threaded-aluminum shocks. I also used a full set of Yokomo orange springs with Losi* 60WT oil in the front and 50WT oil in the rear.

Shock locations. All stock, baby; I found these positions worked best at my test track.

KIT FEATURES

Tires. The kit tires are made of a fairly soft rubber with foam inserts, and they worked fine in the parking lot, but for racing, there is no substitute for a competition slick tire. I decided to use a complete set of OFNA* 30-degree belted tires on OFNA split-spoke rims with Top* medium inserts in all four. I went with the OFNA split-spoke rims because they're among the few rims that don't bind on the 4W's offset hubs. The OFNA tires are very sticky, and they hooked up on the medium- to high-bite track.

Camber. To keep the tires parallel to the ground during cornering, both front and rear were set to -1 degree camber. After a few runs, the tires showed even wear; that's a good thing.

Toe. Up front, I set the wheel to 1 degree toe-out. By doing this, I toned down the aggression of the steering. In the rear, I dialed in 1.5° of toe-in to help turn better and have better rear traction without sacrificing straight-line speed.

Diff grease. I ran the car with the stock black grease but wished I had gone with one that was heavier. The races were run so quickly that I didn't have any time to switch greases between rounds. I would like to have used a heavier grease in front and an even heavier grease in the rear. I'll probably pick up some OFNA diff-lock grease or some really heavy Mugen* silicone oil.

Swaybars. The track has some bumpy areas and a few tight turns. I yanked the rear swaybar; it just didn't work on my test track.

• Chassis. Like the on-road-inspired tourers that preceded it, the GT-4W is built on a 3mm-thick, narrow aluminum chassis plate. The holes have all been neatly countersunk, and machined engine-mounting slots allow gear-mesh adjustments. Slots under the diffs allow debris to exit the chassis safely, thereby reducing the chances of anything getting stuck in the diffs.

The composite upper deck stretches from the front bumper to the engine and provides a mounting surface for both the throttle and the steering servos. Two composite chassis braces wrap around the engine and are secured to the rear bulkhead for extra rigidity. The centrally mounted fuel tank limits the weight change from side to side as fuel gets low. The 4- or 5-cell, flat-pack-only receiver pack is held in the center of the chassis and can be accessed by removing a panel.

• Drive train. The drive train is similar to most nitro cars' except that the belts are positioned toward the outside of the chassis to allow the fuel tank and receiver pack to be more centrally located. The standard, cam-actuated 2-speed tranny rides on an elongated shaft with a centrally mounted pulley that pulls the rear differential. On the left side, the shaft exits the rear bulkhead where the front drive pulley carries the main drive belt. To keep all rotating mass as low as possible, the belt sits very low on the chassis. The short, front drive shaft connects the third belt to the front differential. Both front and rear differentials are four-gear planetary-style and use grease to control differential action. They rotate steel dogbones to transmit the power to the wheels.

The entire drive train rides on smooth, metal-shielded bearings. A non-vented steel rotor mounted on the main layshaft provides braking. The disc is held in position by four pins that are connected to the rear pulley. The cam-actuated system uses fiber pads to provide smooth, consistent braking.

• Suspension and steering. The GT-4W employs pivot-ball suspension to allow infinite adjustments. This could be a little difficult for some to handle, but it allows subtle changes in geometry to dial the car in to any track. The front suspension has a lower arm with a wide inner stance. The stance reduces wear on the parts by spreading the load over a greater distance. The upper arm allows caster changes with the included clamps.

The GT-4W's rear suspension is a little more unusual than that of other cars in the same league. The lower H-arms and upper A-arms are unique to the GT-4W. They use the same pivot-ball technology as the front, but the upper arm is radically swept upward to be attached to the unusual rear hub carriers. The hub carriers make a sweep from the inside of the wheel and extend above the rear wheel. This design raises the car's roll center to approximately match its center of gravity, which is notably higher in nitro vehicles. All the adjustments to the suspension geometry can be made easily without removing anything from the car.

Plastic shocks grace all four corners of the car. The double O-rings and volume-compensation foam ensure the best possible damping action. The stock springs and oil should make an excellent starting point for most tracks. Preload adjustments are made by inserting the quick C-clip-style spacers. They're attached to the plastic shock towers; the front tower is stiffened by a metal brace.

Steering is handled by an inverted servo that is mounted toward the right side of the car. Instead of swinging a pair of bellcranks, the servo is

Airtronics M8 transmitter

The Airtronics* M8 offers total adjustability of endpoints, servo speed and exponential. All of these features are easily accessible by means of the huge LED screen that even I can figure out how to use; no wonder it's the choice of most racers.

O.S. CV-R engine

This is O.S. Engines'* entry into the 1hp-plus, .12 engine category. The CV-R features a chrome sleeve, larger crank-shaft bearings, beefier machined-aluminum conrod and a slide carb.

Novak XXL FM receiver

My Airtronics receiver was installed in another car, so I went with the Novak* XXL. It can't exploit the 3-channel capabilities of the M8, but it is lighter and smaller and doesn't compromise performance at all.

KO Propo PDS-2144FET steering servo

This digital, internally boosted servo from KO Propo* cranks out 182 oz-in. of torque and has a transit time of 0.13 second. This servo will not budge when powering through a turn.

KO Propo PDS-2143FET throttle servo

Another digital servo from KO Propo that has some good numbers: 112 oz-in. of torque and a transit time of 0.08 second. The speed provides throttle response to match my fast finger and enough torque to stop the car quickly.

Trinity Nitro NiMH receiver pack

The 1100mAh cells from Trinity* provide enough juice for long A-mains with a full 6V output.

O'Donnell Racing fuel

In my experience, O'Donnell Racing* fuel provides good power and consistent performance. The 30-percent nitro is higher than my usual choice of 20 percent, but I was looking for more power.

Paris Racing Turbo Ring pipe

This pipe from Paris Racing* provides great low-end performance gains. It has a pressure fitting as well as a mounting bracket that make installation easy. The stock composite pipe works well, but I wanted to squeeze every last bit of power out of the CV-R.

THE COMPETITION*

	Drive train	Bearings	Diff	Shocks	Engine	Street price**	Reviewed
HPI Nitro RS4 Racer 2	3-belt	Yes	Gear	Aluminum	Not inc.	\$275	—
Mugen MTX-2	3-belt	Yes	Gear	Aluminum	MT12	\$475	4/00
OFNA Nitro OB4	3-belt	Yes	Gear	Aluminum	Not inc.	\$285	11/00
Serpent Impulse	3-belt	Yes	Gear	Plastic	Mega	\$295	1/00
Yokomo GT-4W	3-belt	Yes	Gear	Plastic	RX-12	\$499 (approx.)	12/00

*Cars listed alphabetically by brand. **Approximate; varies with dealer.

PAINTED BODIES!

PREPAINTED BODIES & CUSTOM PAINTING SERVICE! NOW ON DAHM'S WEB SITE! (PRICES SHOWN ARE FOR CLEAR BODIES)



D308 ACCORD 190MM \$21.98

YOU DESERVE A STRONG T-MAXX BODY!

SIX GREAT BODY CHOICES! CUSTOM PAINTED OR CLEAR!

DAHM'S STRONG BODIES ARE 30% STRONGER THAN MOST OTHER BODIES. MOST INCLUDE FINISHING DECALS AND WINGS OR SPOILERS. CALL OR CHECK WEB SITE FOR DETAILS.



D056 BUGGSY™ \$23.98



D316 SLAMMER XL8™ \$24.98



D242 RAMMER XL8™ \$24.98

DAHM'S RACING BODIES

P.O. BOX 360, COTATI, CA. 94931
FOR MORE INFO. CALL: 707-792-1316
TOLL FREE ORDERING: 877-574-7424
www.dahms-intl.com

TRACK TEST Yokomo GT-4W

linked directly to the steering arms, and a large servo-saver is included.

• Engine and accessories. The GT-4W does not include an engine, but Yokomo does have a new powerplant that will fit the car. The new mill was not available for testing, however, so I decided to use the new O.S. CV-R engine, which is designed to churn out more than 1hp. Its slide carb was a tight fit, but it worked flawlessly. I was glad to see O.S. ditch the square "CV"-style head for the much more efficient round, machined-aluminum head.

Yokomo supplies a class-legal 75cc fuel tank with a cap-mounted pressure fitting for consistent fuel delivery, and the cap is zip-tie ready; Yokomo knows you'll want to put a strap on there to yank the tank open during pit stops.

• Body, wheels and tires. The GT-4W does not include a body, so be sure to pick up a 200mm body to complete the package; I used a Protoform* Dodge Stratus.

Wheels and tires are included; 26mm, 12-spoke wheels are surrounded by soft Hot Laps treaded tires. A full set of foam inserts provides the stiffness that the soft rubber lacks, and the wheels are mounted on standard 12mm hexes.

PERFORMANCE

My home track, RC Madness in Enfield, CT, was the testing ground for the GT-4W. As I mentioned in "Building and Setup Tips," I bolted a set of threaded shocks to the car and started with 50WT Losi oil in the front and 45WT in the rear. I also started with a more neutral setup: zero toe up front and -1 degree in the rear.

In practice, the steering was a little too sensitive, and I found that the car had a bit too much chassis roll for my style of driving, but straight-line performance was impressive; the O.S. engine gave the Yokomo cannonball-like acceleration. I had the 2-speed set loose so it would upshift almost instantly. The speed I was able to carry on the track with second gear was perfect, and the O.S. engine didn't bog

at all with these settings. I did feel the car "diffing" in the turns and thought a heavier grease would have helped, but to change it I would have had to miss a qualifier, and I decided it was manageable enough to deal with instead of missing a race.

I still had to tinker with the car, though; it's just my nature. Before I went out for the first round, I switched to the stiffer settings detailed in the "Setup" section. I went out for the qualifier and was immediately impressed with the results. The car had less roll and much more manageable steering, but I wanted the front end to push just a little. I went back to the pits after the race and changed to the stiffer silver springs included with the kit. The car wound up pushing more than I would have liked it to, so the spring change was the wrong move. Oh, well; it's all part of the dial-in process.

For the Mains, which were run at night, it was obviously cooler than it had been during the daytime qualifying, so I switched back to the orange Yokomo springs on all four shocks. But I should have changed tires as well; the cold reduced the tires' adhesion more than my softer settings could make up for. A softer tire and maybe a softer insert would have definitely helped on the cool surface. For certain, it was a tire issue; given the Yoke's easy handling and adjustability, I'm certain the chassis didn't hold me back.

THE VERDICT

The hype for the GT-4W started months ago, and Yokomo has not disappointed us; the GT-4W is excellent. Thanks to its pivot-ball design, it's very adjustable, and its out-of-the-box performance is impressive. No car can bump a driver up from the C-main to the A, but if you have the skills, Yokomo's latest will not hold you back in any way. In a field of highly capable nitro tourers, the GT-4W represents another must-consider car for serious competitors.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■



**TRACK
TEST**
1/10-SCALE ELECTRIC

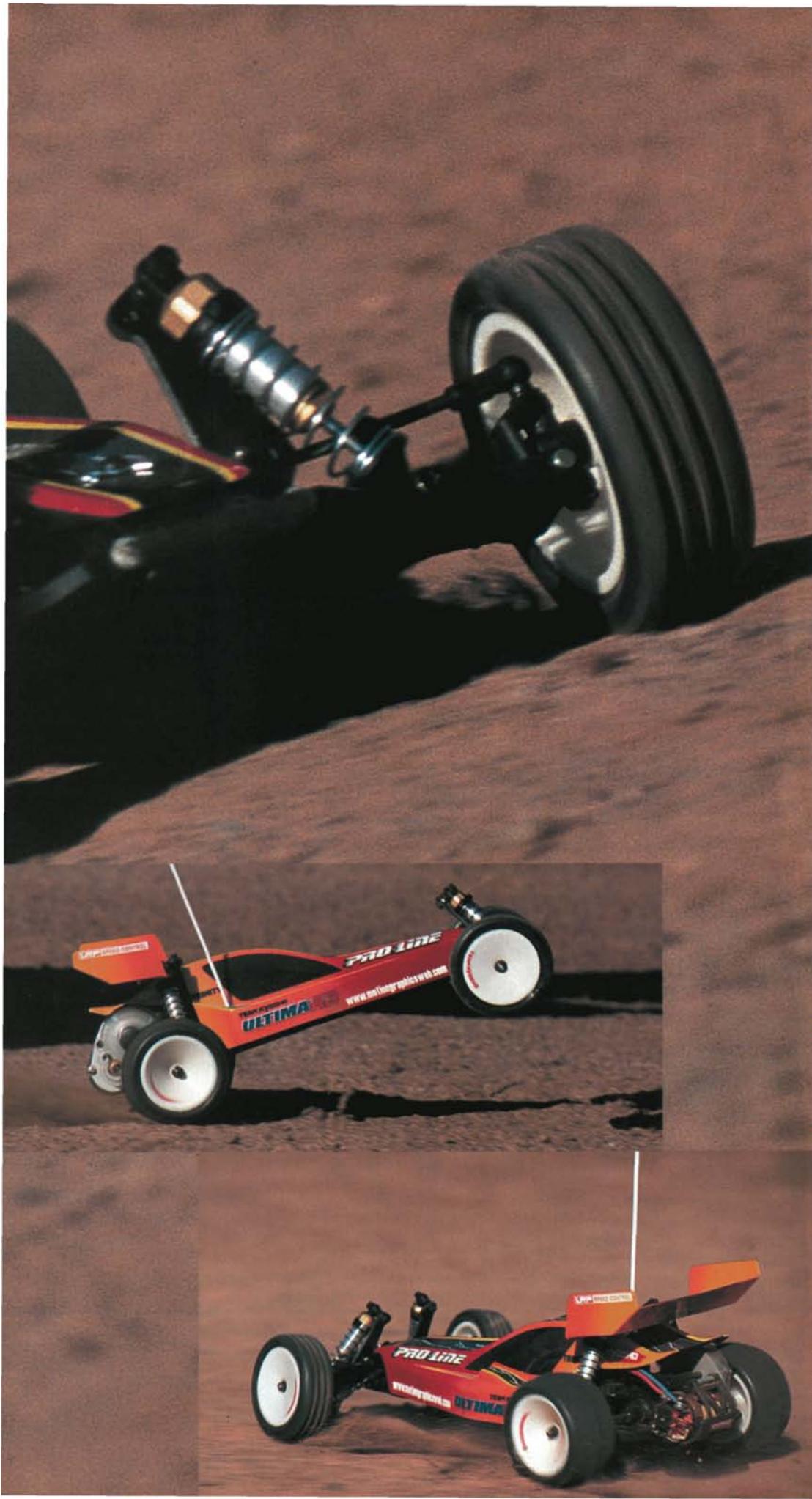


Kyosho Ultima RB Type R

Ready for the Worlds? by Peter Vieira

Kyosho* is well known for its four consecutive IFMAR 1/8-scale off-road Worlds victories, but die-hard electric off-road fans will remember that Kyosho is also a former IFMAR world champion in 2WD electric; Joel Johnson won the 1987 title with the original Ultima. Kyosho revised the Ultima with Turbo and Turbo II models before retiring the design for the Triumph and, later, the Pro-X. The Pro-X was the last of the 2WD Kyosho racing buggies; since the car came and went in 1995, Kyosho's buggy efforts have been limited to entry-level machines.

At least, until now. With the release of the Ultima RB Type R, Kyosho returns to the racing spotlight with an all-new design and a familiar, winning name. The new Ultima is the most race-worthy 2WD off-road K-car to date, and also its most conservative design. The engineers behind the Ultima seem to have followed the standard competition-buggy playbook as written by the Associated* RC10B and Team Losi* X-series, but what the Ultima lacks in chance-taking innovation, it should make up for in competitive capability. There's only one way to find out, so let's hit the bench and take on the track.



DATA CENTER

VEHICLE TYPE $\frac{1}{10}$ -scale, 2WD, electric-competition buggy

BEST BUYER Kyosho fans, racers, enthusiasts of all skill levels interested in a high-quality, race-worthy buggy

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Good

Parts fit/finish Very good

Durability Very good

Overall performance Very good

SPECIFICATIONS

SCALE $\frac{1}{10}$

LIST PRICE \$319.95

STREET PRICE \$230

DIMENSIONS

Wheelbase 10.55 in. (268mm)

Width 9.6 in. (243mm)

WEIGHT

Total, as tested 56 oz. (1,588g)

CHASSIS

Type Modular semi-tub

Material Molded plastic

DRIVE TRAIN

Type Sealed gearbox, 3-gear

Primary Pinion/spur gear

Drive shafts Steel universal-joint

Differential Ball

Slipper clutch Single-pad disc-type

Bearing type Metal-shielded ball

SUSPENSION

Type Lower H-arm with turnbuckle camber link

Damping Aluminum-body, oil-filled shocks

WHEELS

Type One-piece plastic, dish style

Dimensions (F/R) 2.2x1/2.2x1.49 (56x25.4mm/56x38mm)

TIRES

Type (F/R) Pro-Line Wide 4-rib Holeshot LP

LIKES

- Easy to build and work on.
- Race-ready Pro-Line rubber included.
- Excellent, versatile shocks.

DISLIKES

- Manual does not provide any setup information.
- Included pinion and spur gears do not mesh well.
- Shock fluid is not included.

PHOTOS BY WALTER SIDAS

TRACK TEST Kyosho Ultima RB Type R



The single-disc slipper lets you change the spur gear without altering the slipper setting. The gear mounting holes are threaded for 2.6 and 3mm screws.

Left: the dummy transponder isn't part of the kit (this one's from Trinity), but the transponder mount is standard equipment; every racecar should have one. ■ Right: the front clip is easily removed after about 30 seconds worth of unscrewing. The transmission is equally easy to remove, or the entire rear suspension with transmission can be removed as a unit. It's a very easy buggy to wrench on.

YOU'LL NEED ■ Transmitter and receiver ■ Electronic speed control ■ Motor ■ 6-cell battery pack ■ Steering servo ■ Shock fluid ■ Tire glue ■ Polycarbonate-compatible paint

FACTORY OPTIONS ■ "Hard" hinge-pin set (inner/outer) F/R—part no. UMW-101, UMW-103/UMW-102, UMW-104 ■ Front hub carrier, -5" — UMW-114 ■ Carbon-composite main chassis—UMW-301 ■ "Hard" rear hub—SPW-123



The Ultima includes universal rear axles and uses the same rear hubs as the Ultima ST truck and TF-4 Type R touring car. Long-time Kyosho guys will notice the lack of friction-fit drive hexes on the stub axles; Kyosho went to a much more convenient (and secure) crosspin design.

building & setup tips

The Ultima RB Type R is neatly packed into just five parts bags, which speaks to the simplicity of the kit. Thanks to a clearly illustrated manual and the car's modular design, even rank beginners should have no trouble building the Ultima RB. If you've already built a few off-road cars, you'll fly through the assembly process. The following tips will make the build go even more smoothly and help you get the most out of the RB; each tip references a step in the manual.

BUILDING

Step 1. Nose-plate installation. Pass the three flat-head screws through the chassis, then apply a strip of tape over them so they don't fall out. Now you can line up the nose-plate and the nuts without the screws falling out. After you get the nuts started, pull off the tape and tighten the screws.

Steps 2 and 3. Rear bulkhead and rear shock tower assembly. The instructions call for the rear shock tower to be installed on the rear bulkhead after the bulkhead has been installed in the chassis. It's easier to install the shock tower on the bulkhead while it is out of the car, then install the assembly as a unit.

Step 5. Transmission assembly. The instructions do not note which side of the transmission the diff-adjusting screw should face. The diff will fit and operate properly no matter which side the screw is on, but I prefer to install it so the screw is on the right side, so that if the thrust bearing seizes, the diff screw will only get tighter. Better a too-tight diff than one that's too loose!

Step 9. Axle assembly. To eliminate axle end play, install two 5x8x0.5mm shims between the roll pin and hub. The manual calls for just one, which leaves a little slop.

Step 26. Shock assembly. Hmm; do I build the shocks "Associated style" with a bladder, or "Losi style" without? I decided to do both: I installed the bladder but filled the shocks from the bottom. They came out great—supersmooth, with barely any air to emulsify. Even if you decide to build "Associated style," think "Losi;" if you want to change your pistons without changing the shock oil. By unscrewing the lower cap, you can remove the piston and the shock shaft without emptying the shock body. No one wants to refill their shocks any more than necessary, right?



KIT FEATURES

Chassis. The Ultima's molded chassis most closely resembles that of Associated's RC10B series, and like that design, it features separate nose and tail plates that are fastened to a molded main chassis. The Ultima's tail plate is stamped from attractive, satin-finish aluminum, but the nose plate is molded—unlike the aluminum nose plate favored by Associated. The chassis' nose is quite flexible by itself but is strengthened considerably once the molded upper deck has been installed. The short deck reaches from the steering servo (which is left exposed for easy access) to the tiny front bumper.

The main chassis has stiffening ribs that fan out from the battery tray, and the sides of the chassis are raised relative to the tray for cornering clearance and less scrub, should the chassis bottom out. A hinged battery strap holds 6 cells in place, and foam spacer blocks allow the pack to be positioned fore or aft in the tray. No bulkheads are molded into the chassis, which permits the front-suspension and rear-suspension/drive train components to be removed intact. This simplifies assembly and maintenance.

Drive train. If you're a long-time Kyosho guy who remembers the Triumph's draggy belt box and the Pro-X's finicky 6-gear setup, you'll be very happy with the Ultima's TR-Pro 3-gear, bottom-diff transmission. The new tranny is up to speed with current gearbox tech, and Kyosho even specs common 3/32 diff balls for the ball differential instead of a metric size. Polished, non-indexed diff rings and steel outdrives are standard, and the thrust bearing is the "you-build-it" type with separate thrust washers and balls that are retained by the bore of the outdrive into which the bearing is installed. The diff and idler gears are plastic, and the top gear is steel and is integrated with the top shaft.

The Ultima includes a single-disc slipper clutch drilled for standard "two-hole" spur gears. The clutch is easy to work with; the spur gear is not sandwiched between the slipper plates, so the spur can be replaced without altering the slipper setting.

Factory-built, steel universal-joint axles complete

the drive train. Don't look for aluminum, friction-fit drive washers and tapered axle ends; thankfully, Kyosho has moved to roll pins. In addition to staying put, the roll pins make it easy to shim up the axles to eliminate end play, and they allow Associated rims to be fitted to the axles.

As you would expect of a "Type R" racing kit, all of the Ultima RB's drive parts spin on shielded steel ball bearings.

Suspension/steering. Kyosho's new "Twin Capped" dampers are the highlight here. As the name implies, the shocks have two caps; the lower cap houses a pair of O-ring seals with Teflon spacers, and the top cap holds down the molded shock eyelet which is sealed by an O-ring or a bladder, depending on how you choose to build the shock. You can fill the shock from the top and cap it with a bladder "Associated style," or seal the cap with an O-ring and fill it from the bottom "Losi-style" (see "building and setup tips" for notes on each method). The shock parts themselves are all top quality; the gold-anodized aluminum seal caps thread into the shock bodies very precisely, the piston bores are finely polished, and the Teflon pistons are crisply molded.

The rest of the suspension is standard racing stuff: well-sculpted H-arms do the heavy work; the shock towers are made of 3mm fiberglass plate (front) and molded plastic (rear); and steel turnbuckles keep camber and toe in check. The rear arm mounts are independent left-and-right units with 3 degrees of toe-in. Additional mounts with other toe settings are not included, nor are any listed as options, but I have to believe Kyosho plans to offer them. The Ultima sports the same combined kingpin/ball studs, aluminum in-line front axles and minimalist rear hubs as the Ultima ST Type R racing truck (fun fact: the rear hubs are also used by the TF-4 Type R touring car). For the most part, the Ultima keeps with the current trend of fewer (but, hopefully, more carefully chosen) shock and camber-link positions; up front, the shocks get two holes on top and one on the bottom, with three inboard positions for the camber link; and in the rear, there are three

SETUP

Given the clear racing intentions of the Ultima RB Type R, I found it very surprising that the manual offered absolutely no setup advice; there are no gear charts, shock fluid suggestions, or starting setups. The manual doesn't show any part numbers for tuning springs, either, but Losi springs will fit well enough. I wouldn't say I've discovered the ultimate Ultima setup, but I got the car working fairly well with the following settings:

Ride height: 27.5mm (front arms and rear axles level)
Front toe-in: 1°
Camber (F/R): -2°
Damping fluid: Team Losi Certified 35WT
Pistons (F/R): 2C/2B
Shock positions (F/R): inside hole on the tower/
 middle hole on the tower, outer hole on the arm.
Camber-link positions (F/R): innermost hole on the tower/
 lower middle hole on the tower, inboard hole on the hub
Battery position: centered

THE COMPETITION*

	Chassis	Drive axles	Shocks	Slipper	Turnbuckles	Wheelbase	Weight**	Street price***	Reviewed
Associated RC10B3 FT	Plastic	MIP CVD	Aluminum	Single-disc	Titanium	270mm	53 oz.	\$220	10/2000
Kyosho Ultima RB Type R	Plastic	Steel universals	Aluminum	Single-disc	Steel	268mm	56 oz.	\$230	12/2000
Team Losi Triple-X	Plastic	Steel universals	Aluminum	Double-disc	Steel	274mm	54 oz.	\$210	10/1999
Schumacher Fireblade EVO	Carbon composite	Alum. universals	Aluminum	Single-disc	Steel	262mm	56 oz.	\$220	3/2000

*Cars listed alphabetically by brand. All include ball bearings. **Weight as tested; weight varies with equipment used to complete kit. ***Price varies with location.

KO Propo EX-11

Presto transmitter

I used the Presto along with its KR-297FZ receiver. I find myself reaching for the Presto more and more, even though I also have a Mars-KO Propo's top radio. The Presto case is a little comfier, and since I keep my Mars on "System Level 2," I'm really not missing any features by using the Presto.

LRP SR speed control

The "SR" stands for "stock racing," and that neatly sums up LRP's mission for this controller. The SR is programmed to deliver a punchier feel, thanks to a narrower deadband and a higher minimum throttle setting. This effect is definitely noticeable and, if nothing else, helps the confidence factor.

Trinity P2K Pro stock motor

Gotta love the P2K. Remember when stock racing meant buying a bunch of motors over the season to keep performance up? Since the Paradox came out and set up the rebuildable stock concept, those motor-a-week days seem like a hundred years ago. Trinity's P2K is the stock-class standard, and the "Pro" model adds a retrued comm and serrated brushes.

Trinity Sanyo 2400 matched pack

Ni-Cd punch is a must for stock racing, and Sanyo's 2400s guarantee you'll make run time even with to-the-moon gearing. I built the pack with Trinity Watt Bars and used Trinity heat-shrink to protect the labels.

Futaba S904 steering servo

Futaba's S904 delivers a claimed 79.2 oz-in. of torque with a transit time of just 0.11 seconds. That's plenty of turnin' torque for a buggy, and the transit time is speedy but not so quick that handling becomes twitchy (some guys like faster servos, but I don't drive well with them).

TRACK TEST Kyosho Ultima RB Type R

upper and two lower shock positions but more camber-link options; six positions inboard, two outboard.

All appears well with the overall suspension setup, with one exception: the plastic ball cups snap onto their steel ball ends very easily, which, it's hoped, does not mean they will snap off with equal ease when you least expect or want them to (during a Main, for instance). We'll see what happens on the track.

• **Steering.** Nothing unusual here; just a pair of bellcranks with an adjustable spring-and-cam-style servo-saver and a short link to join the cranks to the transverse-mounted servo. The servo mounts can be configured to fit a bunch of different servos, and it's easy to get the servo in and out of the car without removing the top deck (although you will need to remove it, if you want to adjust the servo-saver; its knurled adjustment wheel is virtually impossible to turn with the top deck in place). Servo horns are included to fit all servos, including Hitec's*.

• **Body, tires and wheels.** If you like the tall cockpit/low-slung side-pod look (I do), then you'll love the Ultima body shell. And when it's time to bust out the spray cans, you'll really like the overspray film and window masks it includes and the decal sheet full of Kyosho and Pro-Line* logos provided to style it out.

Pro-Line logos? Why, yes, all the better to show off the included Pro-Line Wide 4-rib front tires and Holeshot* rear treads that Kyosho wisely specs as standard equipment. The tires and their included inserts are fitted to Pro-Line rims that are interchangeable with Associated rims (or rims meant to fit Associated). Losi rims will fit on the axles, but because of their deeper offset, they will narrow the rear of the Ultima considerably and the tires may rub the rear shocks.

PERFORMANCE

Xtreme Raceway's track is pure East-Coast style: no blue grooves, lots of soft stuff and no shortage of ruts and bumps. This type of terrain is truck territory, and I wasn't surprised to find the Stock Truck class was the best attended; I was surprised to find there weren't enough guys to run a buggy class!

Instead of testing the Ultima against one or two other guys' buggies (if I could have convinced them to run them instead of their trucks), I decided to go ahead and run the Ultima in Stock Truck.

I started the first qualifier in the number-one position and took off in the lead at the starting tone. I was soon caught as I slowed for the first turn, and my "slow is fast" strategy bit me in the behind as five trucks smashed into the back of the Ultima and rolled over its roof. The Ultima emerged from the carnage with a solid hold on last place, but I wasn't deterred. I drove a little more aggressively and made up some time but lost ground on the straights; the pinion gear felt about two teeth too small. Gearing aside, the Ultima felt dialed; the moist, thick soil gave the Pro-Line Bow Tie tires plenty of bite, and it was easy to kick the rear wheels loose to get around tight hairpins.

The track features a few low, but steep, mogul-style jumps that would easily pitch a car or truck onto its roof if you weren't careful with the throttle, but the Ultima took these in its stride even when I hit them slightly off-camber. The track's one, large roller jump was easy to tackle, but launching off it would land you deep in the next corner and add time to your lap. I was able to tap the brake in the air, drop the Ultima's front end onto the back of the jump and tuck it tightly into the next straight; that kind of precise handling helped knock tenths off my lap times (time that I put back on with goofy moves, but that's me). Passing was difficult, as

even the most innocuous tap from one of the trucks pitched the Ultima into the boards (or plastic tubing, as the case may be), but that isn't a criticism of the Ultima. No buggy can trade paint with a truck and expect to come out on top!

Xtreme inverts the starting order for the second round of qualifying, so I started in last place for round two. By resisting the urge to clamp the throttle at the starting tone, I was able to soft-pedal around the first-turn mayhem and stroll away in first, but I threw it away by spinning the car into the weeds at the next turn. The track was drier now, and the Bow Ties weren't hooking up as well. I battled mid-pack for the entire 5-minute heat, and I had a lot of fun, even though I had to hold back a little because of my lack of traction.

I was getting a feel for the Ultima, and it seemed easier to drive; in fact, I was confident that I was a tire swap away from a good run in the Main.

Much to my surprise, I squeaked into the A-main! I made no changes except for changing to Pro-Line Step Pin rear tires, and I put my car on the track in the last spot (hey, I told you I just squeaked in). I took off to an early lead, blew it as usual, and finished in third on the lead lap just two turns behind the leaders. My driving is the number-one factor that kept me from a better finish, but I did notice the Ultima was getting a little squirrely as the track got more bumpy and rutted. It took an occasional "wild hop" through the rough stuff, but I think a switch to slightly lighter shock fluid would settle it down by allowing the shocks to react more quickly. I doubt that any other competitive buggy with a similar damping setup would have behaved much differently.

After "official" racing had been wrapped up, I had time and batteries left over to play around. I strapped in an 11x3 modified motor, dropped back two teeth on the pinion and tore up the track. I think I surprised a few of the gas-truck guys when I flew past them on the straights; it's tough to beat mod-motor speed! As you might expect, the extra horsepower made the Ultima less tolerant of ham-fisted driving, and the ruts that bounced it around with stock power took an extra toll at higher speeds, but the Ultima was still relatively composed; I hope I'll get to run in two-mod next time. Until then, I expect good things to come from the Ultima, and I'm sure a "Second Look" report will follow.

THE VERDICT

I enjoyed racing the Ultima buggy. In my experience, it's a solidly built, competent handler that gives up nothing to the other competition cars in its category. The loose ball cup problem I anticipated never materialized, and there were no other problems with durability (real or imagined). The only items I found to be sub-par were the pinion and spur gears, which growl annoyingly but function properly.

Ironically, the Ultima has been criticized for its lack of originality—despite the long-held contention that Kyosho would fare better with racers if its cars were more like the popular Losi and Associated designs. In truth, the Ultima RB Type R is the racing buggy most of us have been saying Kyosho should build; it features proven buggy technology; its key consumable components are compatible with parts already on the hobby shop shelf (most notably, Associated rims and $\frac{3}{32}$ diff balls); and Kyosho packages replacement parts sensibly, so you can buy the components you're likely to need (such as suspension arms) without having to pay for other items as well (such as every other part that might be on the same tree).

Quite simply, the Ultima RB Type R is a good kit that deserves a look—and a test drive—if you plan to race 2WD buggies. It isn't the only good choice, but it's certainly one of them.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

TRACK
TEST
1/6-SCALE ELECTRIC



Schumacher **Big 6 Lotus Elise**

A big-scale exotic on a small-scale budget by Derek Buono

Picture this: you drive up to the Lotus dealership to pick up a brand-spanking-new Lotus Elise. You've already chosen the color and options you want, so you ask the salesclerk whether your car is ready for delivery. He asks you to fill out the final paper-

work then hands you a box. You take your new Elise, stick it in your trunk and drive away. How can you fit an exotic car in the trunk of your old jalopy? Schumacher USA* has released a $\frac{1}{6}$ -scale, 2WD electric version of the Euro exotic that is available at Lotus dealerships all over Europe. There aren't too many Lotus dealers near my house, but now I have an Elise in my driveway because it is available from Schumacher. Read on to find out what's in the box.



DATA CENTER

VEHICLE TYPE $\frac{1}{6}$ -scale 2WD on-road

BEST BUYER Enthusiasts who are looking for something scale and big

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Satisfactory

Parts fit and finish Satisfactory

Durability Good

Overall performance Satisfactory

SPECIFICATIONS

SCALE $\frac{1}{6}$

LIST PRICE \$239.99

DIMENSIONS

Wheelbase 15 $\frac{5}{8}$ in. (396.8mm)

Width (F/R) 13 in. (330mm)

WEIGHT

Total, as tested 7.135 lb.

CHASSIS

Type Single plate

Material 6061-T6 aluminum

DRIVE TRAIN

Type Three-gear transmission

Primary Pinion/spur gear

Drive shafts Plastic universals

Differential(s) Ball

Slipper clutch None

Bearing type Shielded bearings

SUSPENSION

Type Independent lower A-arm with fixed-length camber link

Damping Plastic, oil-filled, coil-over shocks

WHEELS

Type One-piece 12-spoke

TIRES

Type Slicks

ELECTRONICS (not included)

Radio Airtronics* Blazer Sport

Motor Orion* Pilot 19x2

Servo Airtronics 94102

ESC Novak* Super Rooster

Battery Powers* Max 3000mAh

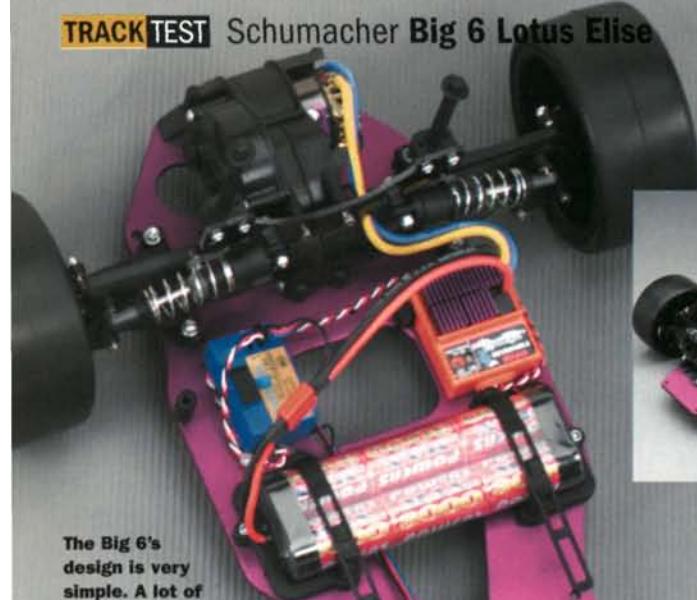
LIKES

- Impressive scale looks.
- Factory assembled.
- Bearings included.

DISLIKES

- Fixed camber links.
- Car is heavy for 05-motor power.
- Steering linkage appears to belong on a $\frac{1}{16}$ -scale car—not $\frac{1}{6}$.

TRACK TEST Schumacher Big 6 Lotus Elise



The Big 6's design is very simple. A lot of aluminum stretches between the front and rear suspensions. A dual-battery setup option could make for some long run times.



Schumacher has used this internally splined hub design on a bunch of vehicles. The wheels are giant size, but the hub carriers and suspension pieces are $\frac{1}{10}$ -scale parts.

Below: the thick, plastic slider shafts can handle a lot of torque, and ball bearings keep everything turning smoothly. The rear shocks are factory-assembled and installed. Note the large standoff on the suspension arm that gives the shock its "laydown" position.



YOU'LL NEED ■ Transmitter and receiver ■ Electronic speed control ■ Motor ■ Steering servo
■ Battery ■ Polycarbonate-compatible paint ■ Tire glue



The Lotus doesn't look that big until you compare it with a $\frac{1}{10}$ -scale sedan (here, an HPI RS4 Pro2). With the Big 6, you can give rides to your friends' sedans—nice!



Below: fixed camber links and an oversize bellcrank system actuate the front wheels. A wire linkage is included to link the servo to the bellcranks, but I replaced it with a much stiffer titanium link.



building & setup tips

The Big 6 chassis kit has been assembled for you, so little effort is needed to get the car on the road. But as with any vehicle, a couple of things need to be done before the first run.

Tire mounting. These tires will be hard to come by unless you live near Schumacher USA's headquarters in Florida. Instead of gluing the entire bead around the rim, I tacked the tires onto the rims with a dab of glue in four places on each side of the rim (I used every third spoke as a reference). This way, I'll be able to remove the tires from the rims more easily when it's time for a new set.

Battery options. I chose to mount the single pack in the second position in an attempt to move some of the weight forward in the chassis. This also allowed me to mount all the electronics toward the back, which made everything look neater. There is room on the chassis (and mounting holes) to install a second battery holder. With two packs wired in parallel, you can double the Big 6's run time. You could also wire the packs in series for a fast (albeit motor-frying) 14V speed run, but I don't recommend it.

Servo linkage. The included wire linkage doesn't really belong on a kit of this size. The kit's huge tires are going to be troublesome enough for the servo to move without the flimsy servo linkage adding slop to the system. I replaced the stock servo-saver with a heavy-duty Airtronics servo horn and got rid of the two-piece wire linkage in favor of a Lunsford titanium tie rod.

The body. Don't think that one can of paint will suffice on this body; it took three cans of Pactra* Daytona Yellow for me to get a rich yellow hue. The kit comes with some tinted window decals, but I prefer the clear look. I kept the "visor" portion of the windshield decal and painted black molding around the window so the body retained a clear window look.

SETUP

I found the stock setup a lot of fun and very realistic. The excessive body roll gave the effect that the car was going even faster than it really was. If you try to reduce the body roll to perk up the car's performance, I suggest that you use thicker shock oil and Schumacher's optional tuning springs for a stiffer setup.

KIT FEATURES

• **Chassis.** Schumacher refers to its $\frac{1}{6}$ -scale chassis as "Big 6," and it certainly is big. The single-deck, purple-anodized aluminum chassis measures $22\frac{3}{4}$ inches from end to end—just about double the size of a $\frac{1}{10}$ -scale car. The chassis is 4mm thick and doesn't allow much flexing despite the fact that it's the size of a diving board. The mounting holes have all been countersunk to prevent screw-head damage, and several holes have been cut in the chassis to reduce weight. The edges of the chassis have been smoothed over but have an unevenness that is not in keeping with the well-finished look of the kit's other parts.

• **Suspension and steering.** Schumacher was able to cleverly incorporate $\frac{1}{10}$ -scale parts into the Big 6's suspension system. The lower A-arms have been culled from the Cougar parts bin, as was the front bulkhead. A fiberglass tie bar joins the bulkhead to the arm mounts, which are spaced far apart on the wide chassis to provide the appropriate $\frac{1}{6}$ -scale width. Both front and rear A-arms are connected to their pivot points via hinge pins, and non-adjustable, one-piece molded camber links keep the hub carriers in position. The design of Schumacher's steering arm and rear hub is unique; no stub axles protrude, front or rear. Instead, the wheels are keyed to the axles, which are enclosed in the steering arms and rear hub carriers. The front wheel bearings are held within the steering hubs instead of the wheels, so all four of the Big 6's wheels are interchangeable.

The Big 6's fiberglass front and rear shock towers are wide and low and hold the shocks nearly parallel with the lower arms. The 3-inch plastic shocks are factory-assembled and filled with oil, and they are standard Schumacher off-road parts with the usual foam volume compensators and adjustable two-piece pistons. New, extra-stiff springs are supplied for the rigors of suspending the heavier, wider chassis. Tall standoffs are bolted to the suspension arms and compress the shocks in their laydown position.

The steering system is a conventional double-bellcrank setup with the bellcranks widely spaced to match the enormous chassis. A fiberglass drag link extends well past the bellcranks to reach the short, fixed-length steering tie rods. A servo-mounted servo-saver is supplied. The steering geometry is unconventional, but it works. One thing that doesn't work for me is the wire linkage supplied to join the steering servo to the bellcranks; the setup is simply too flimsy. I installed a Lunsford* link instead.

• **Drive train.** As it does with the suspension, Schumacher puts existing $\frac{1}{10}$ -scale hardware to use in the drive train. The three-gear transmission with ball differential is shared by the Cougar 2 and accepts a standard "05"-size motor (not included). The Big 6 is a lot of vehicle for a standard electric motor and a $\frac{1}{10}$ -scale tranny, so it should be interesting, to say the least, to see how the drive train holds up. Oversize plastic slider shafts connect the

outdrives to the rear wheels, and all of the gears and axles ride on metal-shielded ball bearings.

• **Body, wheels and tires.** The huge, officially licensed Lotus Elise body is very impressive. It's constructed of thicker Lexan than the typical $\frac{1}{10}$ -scale body, and that makes the Elise shell rather heavy, but it sure looks good with a scale yellow and black paint job. Opaque window stickers give a "tinted" look, and headlight decals are supplied but are not well detailed. Fellow assistant editor Bob Hastings vacuum-formed some headlight buckets for me that are far more eye-pleasing and "scale." The Big 6 sports appropriately large rubber and wears soft slick tires that measure 4.1 inches in diameter. The low-profile tires are mounted to one-piece 12-spoke wheels without the benefit of foam liners. Combined with the big body, the black-on-black wheels and tires give the Elise a hunkily huge stance that belies the simple chassis underneath.

PERFORMANCE

Given the Lotus's proportions, a parking lot was the natural choice for a test drive. At the first squeeze of the throttle, the car took off (although not very quickly; because of the car's size and weight, I had purposely used a higher turn motor.) Once it got going, the car had a decent top speed and responded to inputs with only a slight delay.

The suspension's "soft" setup and the mild motor made the car almost impossible to get out of line. The rear tires followed the fronts for the entire run and were only broken loose by the most aggressive slalom action. The car was quite nimble at lower speeds, and an abundance of body roll actually made driving it very realistic and fun.

When the Lotus reaches top speed, its inertia is tough to overcome. When I applied full brakes, the car took a lot of time to stop. One of the coolest things about the car was the Hoover-esque sound it made while it was moving. The body must have some resonating quality, as it amplified the transmission noise until it almost sounded like musical notes.

I must mention that the car looks awesome tooling around the parking lot. In fact, that's what this car was made for: looking good. It isn't going to come close to keeping up with its smaller, 4WD cousins, but it will go far on its distinctive looks alone.

Because it can carry a dual-pack setup, installing a lower turn motor will make this car much faster, and run time will probably not be greatly affected. With the single 3000mAh pack and a 19-turn, I earned a healthy 15 minutes of fun; that's not bad, considering the car's "big-boned" profile.

THE VERDICT

The Schumacher Lotus is in a class by itself. It isn't made to burn up the track or set a new land-speed record, but the car does succeed in being flat-out cool. In size and style, it simply dwarfs smaller $\frac{1}{10}$ -scale sedans, and the body is a nearly perfect replica

Continued on page 244

Airtronics Blazer

Sport radio

The Blazer replaces the aging Rival series from Airtronics. The "sport" version has servo reversing and trim adjustments, but that's all—and that's all I needed for the Big 6. The most notable difference between the Rival and the Blazer is the radio's overall design; the Blazer is chunkier and more futuristic-looking.



Airtronics 94102 steering servo

This 40 oz-in. servo is included with almost every Airtronics radio system, and the Blazer is no exception. You might expect a $\frac{1}{6}$ -scale car to require a stronger servo, and ordinarily I would agree, but thanks to the mechanical advantage of the large steering bellcranks and the car's relatively light weight for its size, the Airtronics "standard" servo worked just fine.

Novak Super Rooster

The Super Rooster can handle some serious current in forward as well as reverse. I wanted to be able to back the big Lotus out of trouble, and the Super Rooster seemed like a perfect match.

Powers Max-3000 cells

The Powers Max name might not be familiar, but these NiMH cells seem to perform as well as other 3000mAh batteries. The extra run time the 3000s provide is great for playing in the parking lot and on the track.

Orion Pilot 19-double

To get these big wheels moving and still have some run time, I went with a 19-double machine-wound motor. The Pilot scored well in our machine-wound motor shootout, and it didn't seem to strain too hard when pushing the Big 6 around the parking lot.



Tamiya TA04

**Less innovative, but more competitive:
track testing the TA04** by Greg Vogel

In the October issue, we brought you a "First Look" on Tamiya's new TA04

Pro—a machine designed specifically for the competitive sedan racing scene. Tamiya* put aside the shaft- and belt-driven gearboxes of the previous TA-series vehicle for a conventional race-type, two-belt system and built it into a double-deck plate chassis with open ball differentials. These changes show that Tamiya is serious about racing and willing to build what racers want. Read on to see how the TA04 fared on the bench and at the track.

DATA CENTER

VEHICLE TYPE $\frac{1}{10}$ -scale electric 4WD touring sedan

BEST BUYER Intermediate drivers or serious racers looking for a race-worthy sedan

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Very good

Parts fit/finish Good

Durability Very good

Overall performance Very good

SPECIFICATIONS

SCALE $\frac{1}{10}$

LIST PRICE \$374.99

STREET PRICE \$308.99

DIMENSIONS

Wheelbase 10.06 in. (255.6 mm)
Width (F/R) 7.34/7.29 in.
(186.5/185.2mm)

WEIGHT

Total, as tested 57.5 oz. (1,630g)

CHASSIS

Type Double-deck

Material Fiberglass

DRIVE TRAIN

Type Dual-belt 4WD

Transmission Pinion/spur

Drive shafts Dogbones

Differentials Ball

Bearing type Rubber-sealed and metal-shielded

SUSPENSION

Type (F/R) Lower A-arm
w/adjustable upper link

Damping Oil-filled coil-over plastic shocks

WHEELS

Type One-piece, 2-inch plastic

TIRES

Type Rubber slicks with inserts

ELECTRONICS (not included)

Transmitter Airtronics M8

Receiver Airtronics 92837

Steering Airtronics 94157

ESC Novak Cyclone TC

Motor Orion Chrome Touring

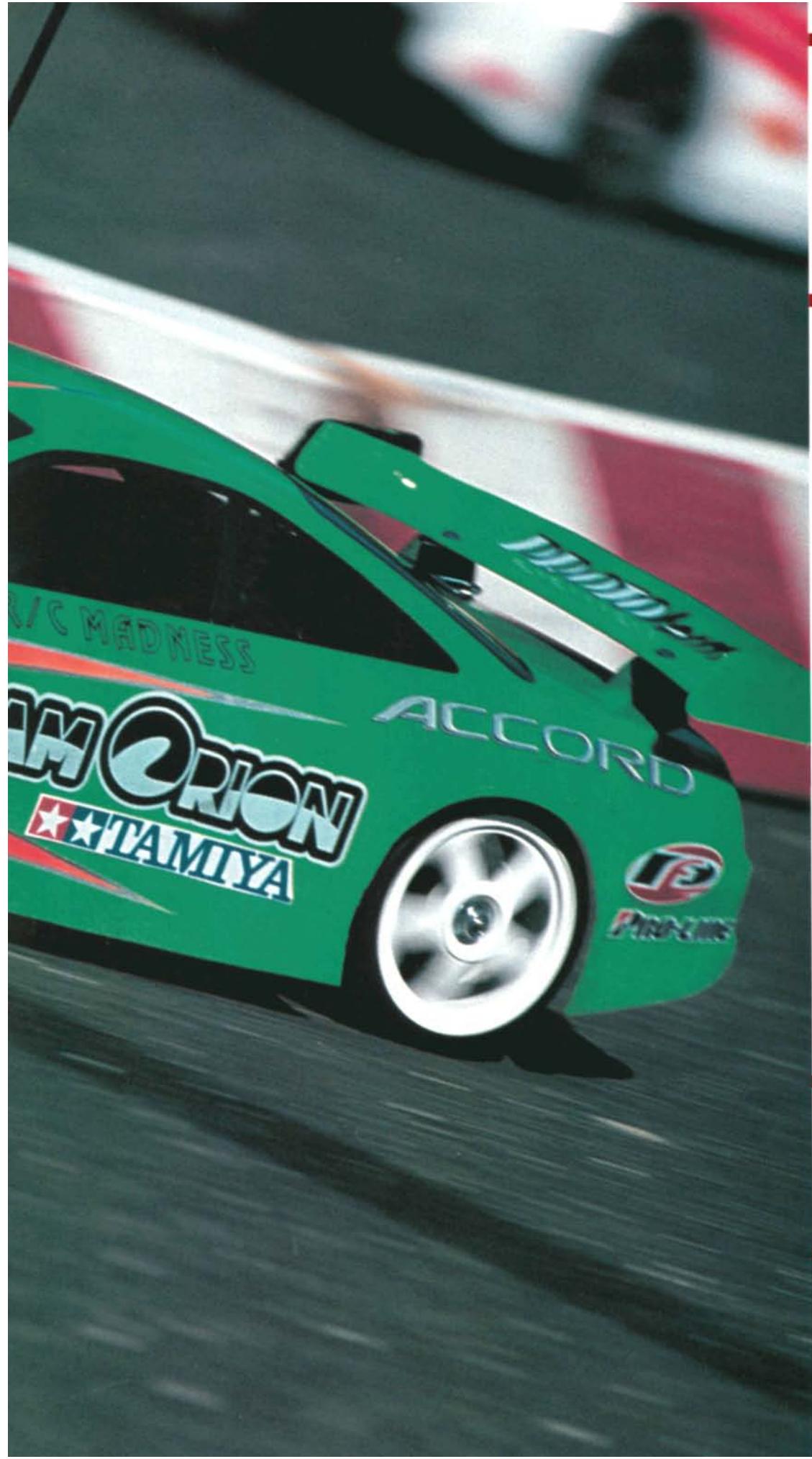
Battery Orion V-max 2400

LIKES

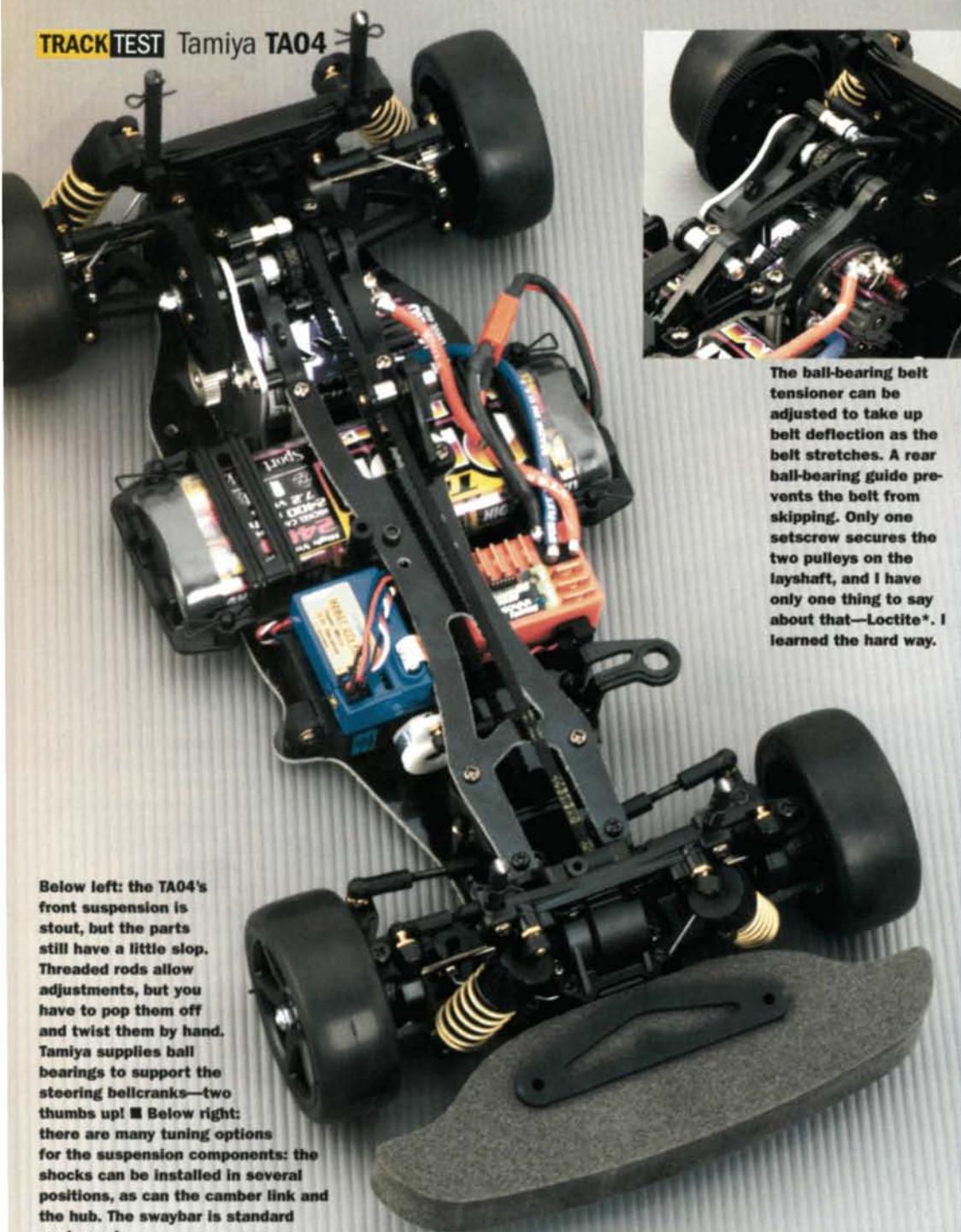
- Handles well in stock form.
- Smooth differentials felt like new even after a full day of racing.
- Ball-bearing-supported belt guides and steering system.
- Great extras, such as racing tires, inserts, swaybars and foam bumper, are included.

DISLIKES

- Chassis does not accept saddle packs.
- Dogbones instead of universals up front.
- Although much improved compared with previous TA cars, the TA04's suspension parts still have some slop.



TRACK TEST Tamiya TA04



Below left: the TA04's front suspension is stout, but the parts still have a little slop. Threaded rods allow adjustments, but you have to pop them off and twist them by hand. Tamiya supplies ball bearings to support the steering bellcranks—two thumbs up! Below right: there are many tuning options for the suspension components: the shocks can be installed in several positions, as can the camber link and the hub. The swaybar is standard equipment.



building & setup tips

Tamiya's TA04 Pro instruction manual is topnotch, just like all its others. Follow the directions for each step closely, and you shouldn't have any problems. I have a few of my own tips to add; try them out.

BUILDING

Step 1. A small tube of "anti-wear" lubricant is supplied with the kit. I used this on the thrust bearing instead of the ball-diff grease. It sticks like glue to the bearing and won't fly off when it's rotating as the other grease will. It slows the diff action for a few runs, but when it's broken in, it's very smooth.

Step 15. When you install the kingpins, be certain to screw them in perpendicular to the carrier; if they are screwed in at an angle, they will bind the steering.

Step 17. Sand the chassis' edges; they are rough and may splinter. You may want to "bead" the edges with CA to prevent them from fraying. Also, in this step, use thread-lock on the servo-post screws.

Step 18. Absolutely, positively use thread-lock on the "pulley-stopper" setscrew. I admit I was too lazy to do it and suffered the consequences of having an ejected screw during qualifying.

Step 26. This step shows the installation of the transponder holder; I placed it on the lower chassis (see next tip).

Step 33. Here, Tamiya recommends that you mount the antenna on top of the rear gear-case cover. Not only is this far away from the receiver, but it also requires that you route the antenna wire near moving drive parts. I relocated the antenna mount to the upper deck (using one of the optional holes for the transponder mount) and used a spare screw and locknut to retain it.

YOU'LL NEED ■ 2-channel transmitter and receiver ■ Steering servo ■ Electronic speed control ■ Motor
■ 190mm body ■ Paint ■ 6-cell stick pack ■ Charger

FACTORY OPTIONS ■ Special damper unit—part no. 49141 ■ Lightweight aluminum hub—49142

KIT FEATURES

• **Chassis.** I was surprised to find that the TA04 includes a stick-pack-only chassis, but then I remembered that stick packs are standard issue for racers in Japan. I will say the well-designed battery cradle holds a stick pack snugly and doesn't let it slide around like some other stick-pack holders do. A poorly secured pack causes weight shift in the turns and could hamper handling (imagine slaloming your full-scale car with a bunch of bowling balls loose in the trunk), but the oh-four's pack isn't going anywhere.

• **Suspension.** There are real improvements here over the older Tamiya sedans. The thick, one-piece suspension arms are molded in strong composite plastic with a matte finish that looks much more serious than the shiny parts of previous TA cars. The front arms are capped and extend past the hub carriers to maximize the arms' effective lengths.

Did you notice I said "hub carriers"? Tamiya opted for tried-and-true hub carriers with kingpin-supported steering hubs instead of fashionable pivot-ball systems. The hub carriers hold the out-drives so that the dogbones pivot in the same axis as the kingpins; this prevents binding of the drive parts while turning. Threaded tie rods are supplied for the camber links, so you must pop the rod to adjust its length. In the rear, conventional-looking hubs offer two camber-rod positions and two positions to raise and lower the hubs relative to the suspension arms.

Tamiya supplies plastic, oil-filled coil-over shocks with two sets of springs—one set specifically for the front and one set for the rear. This shows that Tamiya has done its R&D and didn't just throw in any old spring. The shocks are mounted on plastic towers that feature strategically placed reinforcing ribs for minimal flexing.

Everything in the suspension department looks



The TA04 chassis allows only stick packs. A large slot in the chassis lets the motor sit low; notice it is also dead center in the rear of the car.

and feels "right," and the parts operated with very little excess play when fresh, but after a few runs, I noticed they had developed some slop. The TA04 is definitely better in this area than the previous TA cars, but there's still more play than I like to see in a racing car's suspension.

• **Drive train.** Tamiya has been listening to racers and has come through with a dual-belt-drive design. As a "Pro" kit, the TA04 does not include a motor, but the one you supply will be bolted to an aluminum motor plate that is offset from the center drive supports so it can sit dead center across the width of the chassis. Tamiya supplies an 0.4 module (metric 64 pitch) 40-tooth pinion gear and three spur gears: 112, 120 and 128 tooth. The spur gear is attached to a plastic hub with tapping screws and is held to the layshaft with a nut. You don't have to contend with any

pins to retain pulleys on the shaft; an aluminum "pulley stopper" held with a single setscrew holds both pulleys on the shaft. The belts drive new ball differentials that feature steel outdrives with notched rings, bearing-supported pulleys and an assembled thrust bearing. When it's together, it's as smooth as silk. The diffs sit in almost totally enclosed cases that keep dirt and debris out of their assemblies.

To get power to the wheels, Tamiya uses dogbones in the front and rear. To live up to its Pro name, I would expect to see universals up front (if not all around), but the bones get the job done. The drive train rides on rubber-sealed and metal-shielded ball bearings.

• **Steering.** You won't find any open eyelets that pivot on smooth-shouldered screws in the TA04; all the linkages are attached via ball ends and ball cups like most racecars have. Threaded rods allow toe changes but must be removed for adjustment. Ball

Airtronics M8 and 92837 receiver

In my opinion, this Airtronics® radio system is by far the easiest to program and use. The screen displays all the tuning options simultaneously, so all you have to do is use the arrow button to scroll over to the feature you want to adjust—no surfing through different menus. Expos, trim rates, reversing ABS and a lot more; this radio is packed with features.

Airtronics 94157

I've used this servo in so many test cars that I've lost count. It's reliable and fast, and it has lots of torque to keep the wheels in place at full lock while at full throttle. It was a perfect choice for the 04 Pro.

Novak Cyclone TC

Novak® offers the Cyclone with touring-car profiles for precise throttle response in sedan cars. The profiles can be selected with the setup button or altered with the Pit Wizard. The solder posts are the best feature; they let me install wires of the perfect length when I move the ESC from one car to another.

Orion 2400

V-max stick pack

Believe it or not, I didn't select a matched pack to stick in the 04. My test track isn't huge, and the unmatched Orion® 2400 pack has enough punch and longevity to be competitive.

Orion 13x2 Chrome

Touring motor

These days, a 13-double motor is considered "mild" for a touring car, but on a short track, it's plenty. Anything more would just lead to overshooting corners or excessive drifting when exiting turns with too much throttle. The Chrome mods run strongly and hold up well.

Protoform 190mm 2-door Accord body

The Protoform® Accord shell provides enough downforce for a tight track, and the included window masks and decals make it easy to get a good-looking finish. I painted it using Parma® FasKolor paints.

Sorex tires and rims

When I was in Japan, I brought home a bunch of Sorex tires and rims. There are about half a dozen compounds for various track conditions. The rims are stiff 5-spoke ones with standard sedan offset.

SETUP

Here is my final setup for a tight, paved track with medium grip, under cool conditions:

Tamiya threaded-body shocks

- Front
 - 50WT Losi oil
 - Tamiya blue hard springs
 - Two O-rings under each piston
- Rear
 - 45WT Losi oil
 - Tamiya yellow medium springs
 - Two O-rings under each piston

Tires

- Front—Sorex 24R compound with hard Echo inserts
- Rear—Sorex 24R compound with HPI medium/soft inserts
- Camber: stock locations with 1° negative F/R
- Front toe-out: approximately 1°

TRACK TEST Tamiya TA04

bearings support the two rigid bellcranks, and a plastic drag link connects them. Tamiya even throws in its three-leaf, ring-spring servo-saver to round out the steering.

PERFORMANCE

I made the trip to RC Madness in Enfield, CT, for testing. I arrived early to get in some practice before the organized racing started. I spent my first battery wringing out the car in bone-stock form—stock ride height, stock oil, stock tires; I hope you get the point: it was stock! How did it go? The car had plenty of steering and handled well, but it was a little loose in the rear and had some chassis roll. When I got out of a turn or hit the brakes for a tight turn, the rear tried to come around. I quickly hit the throttle to straighten the car, but it definitely needed some work in the pits.

My first step was to get rid of the roll and, I hoped, get some traction in the process. I could have played with the stock shocks, but I had a brand-new set of Tamiya threaded aluminum shocks. I placed two Acer Racing* O-rings under the 2-hole Teflon piston that comes with the shock kit. I then filled the front shocks with 50WT oil and the rears with 45, and I installed the kit's hard blue springs. I then mounted a full set of Sorex 24R compound tires on Sorex rims with Echo hard inserts. The 24R tires are sticky and should put down some traction. Last, I disengaged the rear swaybar, but I left the front on to give the car some push.

Back on the track, the car's performance was only slightly better. I no longer had the roll problem that caused it to get loose in the rear when braking, but when I went through a corner, if I wasn't accelerating, the rear was loose.

For the next race, I made the rear shocks a little softer by going with Tamiya yellow medium springs and using the center hole on the rear towers. On the track, this setup was marginally better, but I still had a traction problem.

For the Main, I mounted a new set of 24R tires, but this time, I used HPI* red medium/soft inserts. I also yanked off the front swaybar because I thought the car would push with the new inserts, and I wanted more steering.

In the Main, the car handled great and stuck to the track. The new setup worked; the car had a little push but didn't get loose. I was happy with how it ran. I needed the Main to get used to the new setup; I still finished well.

THE VERDICT

I found the TA04 to be nimble and very responsive to tuning changes, and that makes it easier to set up. I think Tamiya did an excellent job of listening to what racers wanted, but the car still has a few sticking points, most notably its incompatibility with saddle packs and what I consider to be excessive play in the suspension parts. Still, the TA04 is by far Tamiya's most competitive sedan yet, and it signals the company's return to the electric racing scene (on pavement, at least). I don't think team drivers David Jun and Jimmy Jacobson will have any trouble putting the TA04 in the A-main at national events, and as an RC racer from way back, I'm always happy to see Tamiya cars getting the job done.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

www.rccaraction.com/zone

car action
Zone
THE ULTIMATE ONLINE RC COMMUNITY

Don't miss these live, open-ended chat events



DECEMBER 8, 4 P.M., U.S. EAST COAST TIME

Featuring *RC Car Action* Assistant Editor Bob Hastings—Bob is the air brush talent behind many of the bodies that you've seen within the pages of *Radio Control Car Action*. Most recently, Bob created the slammed lowrider T-Maxx project, "Maxx Velocity", as seen in the October issue. Want to know how he did it? Ask him!



DECEMBER 22, 4 P.M., U.S. EAST COAST TIME

Featuring *RC Car Action* Senior Editor Chris Chianelli—once again, Chris takes to the keyboard with his trademark irreverence, wit, and decidedly different take on...everything. Everything except RC and nitro power, that is—he's a straight-up expert on both. Click over and get to know the legend!

The RC Car Action Zone features **TWO LIVE CHAT events every month!**

The Zone's bulletin boards are where you'll find the answers to all your RC questions.

CHAT

Go to the RC Car Action Zone at www.rccaraction.com/zone

Sport Peak Ch

by the Staff of *RC Car Action*

Charge! 11 ways to pump up your packs

The best and most convenient way to charge packs is with a peak charger. Peak chargers actually sense when a battery has reached maximum (peak) capacity and automatically stop charging. Hobbyists of all levels benefit from peak-charging their batteries, but computerized, multifunction peak chargers often cost more than many of us want to spend. The latest trend is toward simpler, low-cost peak chargers that deliver a maximum charge with minimum complexity; most just require that you push a starter button, and some automatically charge your pack when you plug them in! There are lots of choices out there, so we've rounded up the current crop of "sport" peak chargers for a little comparison shopping. Check out the features, and get ready for peak power.

What is a "sport" peak charger?

For our purposes, a "sport" charger costs less than \$100, does not use a digital display and does not have adjustable charge parameters other than amperage. Of course, the charger has to electronically detect a peak charge; we weren't looking for mechanical, timed chargers. We have tried to include all chargers that fit the bill, and the chargers are listed alphabetically according to manufacturer name.

Ace RC EDC-01

Ace's new EDC-01 will charge NiMH receiver packs, Ni-Cd receiver packs, NiMH 6-cell 3000mAh batteries and standard 6-cell Ni-Cds. You can select the type of battery you want to charge with a push of a button. An LED is illuminated to confirm your choice. Receiver packs are charged at 0.7 amp; 6-cell batteries are charged at 4 amps. You can select the mode to discharge a pack at a $\frac{1}{2}$ A rate before you charge it. An "abort" button allows you to stop charging at any time before your battery has peaked. A 7.5A fuse protects the charger from overload, and to avoid overcharging, the EDC-01's thermal peak sensor automatically shuts off the charger if battery temperature reaches 120 degrees Fahrenheit.

CHARGE!

We used Panasonic 3000mAh NiMH batteries to test the NiMH charge function, which requires the use of the included temperature probe. The system worked well, and the packs came off the charger at an average temperature of 96.3 degrees F. If you don't hook up the probe, the charger will not operate in NiMH mode. The probe is not used when charging Ni-Cd packs.

- NiMH-compatible
- Thermal peak detection
- Accepts only DC power



CHARGER FEATURES EXPLAINED

The following features are listed in the comparison chart:

Charge amperage. This figure reflects how much current the charger supplies; the greater the amperage, the more quickly the unit can charge a given battery.

Discharger. As the word implies, this device discharges a battery. Most built-in discharge units drain the pack at only 1 or 2 amps, which is very low. Such discharge units are useful for draining the last seconds of run time from a pack before recharging it, but

they aren't very good for dumping a fully charged pack.

NiMH compatible. NiMH stands for nickel-metal hydride. This is a different type of battery; Ni-Cd (nickel-cadmium) cells are most common in RC. NiMH batteries

charger Guide

Apex Delta Plus

The translucent-purple Delta Plus looks more like a radar detector than a charger, but it has plenty of features. It operates off the included AC/DC power supply, and according to Apex, the Delta Plus automatically adjusts its output for 4- to 8-cell batteries. A single button selects the mode of operation: press it once to select fast charge; hold it for 2 seconds for a 1A discharge; and press it twice for a discharge followed by a fast-charge cycle. The Delta also has a recycle function that repeatedly discharges and then peaks your battery until you turn it off. The unit has an adjustable output of 0.5 amp to 4.5 amps, and colored LEDs and beeping indicate which mode it's in.



CHARGE!

The Delta Plus's large dial is not clearly labeled for settings between minimum and maximum, so it was difficult to tell exactly which amperage the unit had been set for. The tones that let you know which charging mode you are in worked just as they were supposed to. Our only gripe is that the LEDs on the charger's face don't line up precisely with the words printed on the face to indicate what the LEDs mean; instead, the LEDs are "connected" to the labels with printed arrows.



- Compact design
- Adjustable current output
- Beeps to indicate mode and charge completion
- No output cord
- Discharger is low-amperage

DuraTrax Piranha

The AC/DC Piranha is easy to operate and charges 6- or 7-cell battery packs. Start the charge by pushing a large red start/stop button. A steadily glowing red LED indicates that the charger is fast-charging. When the battery peaks, the charger automatically drops to a trickle-charge and the LED flashes rapidly. An automotive fuse protects against voltage overload and reversed polarity, and the Piranha shuts down if no peak charge is detected after 45 minutes.



CHARGE!

The Piranha charger was very easy to use and didn't give us any problems. We had no false peaks, and back-to-back charges did not overheat the Piranha.

- Simple operation
- Large DC alligator clips
- Charge amperage isn't adjustable

offer longer run times and are more friendly to the environment, but they require a little more care when being charged. Chargers listed as "NiMH compatible" have been designed to meet the needs of NiMH cells.

Overload protection. Some chargers have internal circuitry to shut them down if they short out, overheat, or are

otherwise overloaded; others have a replaceable fuse. Either method prevents the charger's circuits from frying if something goes wrong with the battery while you're charging it.

Reverse-polarity protection. If you hook your battery pack up backward (positive to negative), this feature will prevent the blunder from damaging the

charger. This is rarely a problem when connectors join the pack and charger, but reverse-polarity protection is a must if you use alligator-clip leads.

Completed charge indicator. This is just a fancy way of saying the charger has a way of confirming that it has finished charging. Some units have a flashing light; others have a chime; some use both.

Input power. This is how the charger gets its power; "AC" is alternating current, which comes from a wall socket; "DC" is direct current. AC chargers convert alternating current to DC before it goes into the battery. Most AC chargers also have an input for DC power, but DC-only chargers are just that—DC only. Never, never try to connect a DC-only charger directly to an AC power source.

Dynamite Mega Peak

This AC/DC charger handles 4- and 5-cell receiver batteries or 6- to 7-cell sub-C packs. The Mega Peak has dual fuses for overload protection, and Dynamite offers a 5-year warranty. One button sets the unit's 1A or 4A charge rate; a corresponding LED verifies the mode that you've selected, and a start button begins the fast charging cycle. When the battery peaks, the charger automatically goes into trickle-charge mode, which is indicated by a flashing LED.

CHARGE!

Using the Mega Peak is a no-brainer; just push the select button to choose 1A or 4A charging, hit start, and that's it. The flashing LED changes to a solid light to let you know the unit is charging. We had no problem peaking Ni-Cd packs of all types, including transmitter and receiver packs.

- Dual fuses for extra protection
- 5-year warranty
- Charge rate can be set at 1 amp or 4 amps, but nowhere in between



Dynamite Vision Peak

This is the Dynamite Mega Peak's cousin and also features a 5-year warranty. The Vision has four red LEDs and one green LED to indicate the battery's charge status (0 to 25, 26 to 50, 51 to 75, or 76 to 100 percent); the LEDs are illuminated in sequence as the pack approaches peak capacity. The large red button selects the charge mode and starts the unit. Two yellow LEDs indicate a charge rate of 2 or 4 amps, and the Vision Peak has a pair of jacks so you can hook up a voltmeter if you want a more precise indication of your battery condition. A special "boost-charge" feature supplies a

30-second full-power charge "to give your battery pack an additional voltage boost." Dynamite suggests that you use this setting after an extended trickle-charge. The Vision Peak uses AC or DC power and is protected by a 2A fuse.

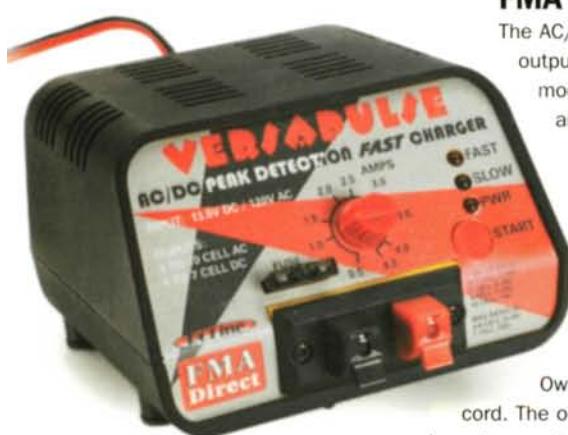
CHARGE!

Another easy-to-use charger. It works just like the Mega Peak but has additional charge-progress LEDs, which we liked. LEDs lit up as the pack charged to let us know how close the pack was to "done."

- LEDs let you know charge status
- 5-year warranty
- Charge rate can be set at 2 or 4 amps but nowhere in between

Charger	Ace EDC-01	Apex Delta Plus	DuraTrax Piranha	Dynamite Mega Peak	Dynamite Vision Peak
Charge amperage	0.7/1.2/4	Adjustable, 0.5 to 4.5	4	1/4	2/4
Discharger/amperage	Yes/0.5	Yes/1	No	No	No
Overload protection	Yes (fuse)	Yes (solid state)	Yes (fuse)	Yes (fuse)	Yes (fuse)
Reverse-polarity protection	No	Yes	Yes	Yes	Yes
Input power	DC	AC/DC	AC/DC	AC/DC	AC/DC
No. of cells unit can charge	4 to 6	4 to 8	6 to 7	4 to 7	6 to 7
Trickle-charge function	Yes	Yes	Yes	Yes	Yes
Warranty	*	90 days	1 year	5 years	5 years
NiMH compatible	Yes	No	No	No	Yes
Dimensions (in.)	4.875x3.5x1.5	3.875x3x1.375	6.75x4.25x2.25	6.75x4.25x2.25	7x4.75x2.375
Weight (oz.)	10.75	4.48 oz	43.96	40	45.32
AC input-cord length (in.)	None	39	45	54	72
DC input-cord length (in.)	12	18	28.5	36	42.5
Output-cord length (in.)	11	None	16.25	22.5	13
Output connector type	Alligator	None	Tamiya	Tamiya	Tamiya
Display	6 LED	4 LED	1 LED	2 LED	6 LED
End-of-charge indicator	Flashing LED	Beep/LED	LED	LED	LED
Temp during charge (degrees F)	104.6	124.7	126.3	91.4	100.7
Street Price**	\$75	\$78.95	\$44.99	\$45	\$49.95

*Warranty not yet determined. **Price varies with location of purchase.



FMA Direct Versapulse

The AC/DC Versapulse offers selectable output amperage from 0.5 to 5.5 in DC mode, but it maxes out at only 2.8 amps with AC power. A 7.5A fuse protects the charger from being damaged if you connect something improperly. An LED lets you know when the charger is on, fast-charging, or slow-charging, and a very loud beep lets you know when the fast-charge cycle is complete.

Owners must buy a separate AC cord. The output connection uses stereo-style clamp-type ports, but there aren't any connectors, alligator clips, or wire.

CHARGE!

We liked the Versapulse's extremely loud "battery-charged" tone, but the same piercing tone sounds whenever you press the start button, and that's tough on the ears. Otherwise, this charger is very reliable, but the low AC-power amp rate makes charging tedious. Use DC power to take full advantage of the Versapulse's capabilities.

- ◆ Adjustable amperage
- ◆ 4- to 10-cell capacity
- ◆ Loud beep lets you know when battery is charged
- ◆ Does not include output or AC cords
- ◆ Low maximum amperage when using AC power

Integy Indi 16x2 2.5

Integy refers to this 4- to 7-cell AC/DC charger as a "battery maintenance system." The Indi offers NiMH and Ni-Cd charging, "Fuzzy Logic" charging, 1A discharging and Ni-Cd cycling. According to Integy, the Fuzzy Logic mode discharges a pack down to 2.6 volts and follows this with a 10-second trickle-charge. The charger then charges at a fast rate while it compares current and input and output voltage data to establish when it should drop to its trickle rate. The Indi's cycle mode discharges Ni-Cd packs at 1 amp and follows with a fast peak charge. Three LEDs let you know which mode the system is in, and the 16x2's visible cues are backed up by tones for start, program switch and end of cycle. The Indi charges at 0.5 amp to 4.5 amps, and a small internal fan keeps it cool so the electronics work properly.

CHARGE!

To select the charging mode you want requires a little practice: you have to hit the single button in a certain sequence. NiMH packs came off the charger slightly warm when using NiMH mode, and the unit charged our Ni-Cd packs reliably.

- ◆ Equipped with cooling fan
- ◆ NiMH-compatible
- ◆ Audible charge-mode indicator
- ◆ Single-button mode selector can be tricky to operate



FMA Direct Versapulse	Integy Indi 16x2	LRP Micro Charger	MRC Super Brain 819	Novak Rhino	ProMax Black Widow
Adjustable, 0.5 to 4	Adjustable, 0.5 to 4.5	0.8/2.2/4	2A/4	Adjustable, 0.5 to 10	2/4
No	Yes/1	No	No	No	No
Yes (fuse)	No	No	Yes (solid state)	Yes (solid state)	No
Yes	Yes	No	No	Yes	Yes
AC/DC	AC/DC	AC/DC	AC/DC	DC	AC/DC
4 to 10	4 to 7	4 to 7	6 to 7	4 to 8	6 to 7
Yes	Yes	Yes	Yes	No	Yes
1 year	30 days	30 days	5 years	120 days	120 days
No	Yes	Yes	No	No	No
5.675x4.5x3.375	5.25x4x2.25	1.75x1.25x0.5	1.675x1.25x 0.75	4.75x4x2.5	6.25x 4.675 x 2.675
43.75	19.76	2.89	37.43	28.26	41.34
None	73	None	57	None	72
14.5	38.25	42.5	21	72	28
None	7	32	12	12.5	12
None	Alligator clip	Tamiya	Tamiya	Tamiya	Tamiya
7 LED	4 LED	4 LED	LED	LED	2 LED
LED	Beep/LED	Beep/LED	LED	LED	LED
105.5	85.4	100.3	124.9	106.7	100
\$55	\$89.99	\$44.99	\$49.95	\$74.95	\$44.99

LRP Micro Charger

LRP's tiny DC charger is about the same size as most ESCs and couldn't be simpler to use: just plug the battery into the charger and plug the charger into a 12V DC power source, and it goes to work. A glowing green LED indicates that it has power and flashes when the unit is charging (the flash rate increases rapidly as the pack "fills," so you can gauge charge time); when the charge is complete the light goes out. The charger detects how many cells are being charged and adjusts the charging amperage accordingly; a 10A fuse protects the charger from accidental overload. The wires are extremely long, but don't shorten them because they serve as resistors and dissipate heat.

CHARGE!

The long wires are great for setting up the charger in your pit space, but they do tend to get tangled. The unit and wires did get very hot during charging, but it charged our test packs without any problems.

- ◀ **Small, so you can take it anywhere**
- ◀ **Simple operation**
- ◀ **Non-adjustable amperage**
- ◀ **Wires get hot**



MRC Super Brain 819

Plug it in and forget it; that's basically how the AC/DC Super Brain works.

This smart box from MRC senses when a battery is connected and automatically begins to charge. A red LED lets you know that the 819 is fast-charging; after peaking the pack, the unit drops to a trickle-charge. According to MRC, the Super Brain's Thermal Management Optimization prevents it from overheating, even if you charge packs repeatedly. The 819's Smooth Power Flex Control (SPFC) is claimed to provide more efficient charging.

CHARGE!

The Super Brain worked as it was supposed to: plug in a battery, and the charger goes to work. The Thermal Management Optimization circuitry kept it at the same temperature pack after pack, but that temperature is a little on the high side.

- ◀ **Simple operation**
- ◀ **Accepts AC and DC power**
- ◀ **No start/stop switch**

Charger FAQs

Can I use any charger to charge a NiMH pack?

No. You must use a NiMH-specific charger. All the chargers listed as compatible only with Ni-Cd cells will put juice into a NiMH battery,

but they cannot detect a peak charge when charging. Even if you monitor the temperature of the pack and take it off as soon as it's warm, you've probably overcharged the pack. Unless your charger's manual specifies it can safely charge NiMH batteries, stick with Ni-Cds.

Can I charge my transmitter batteries with the same charger as I use to power up my car's batteries?

Transmitter batteries have lower capacity than the sub-C cells that power a car; for example, a typical stick pack may have 1700mAh of capacity (that number refers to the number of millamps the pack can sustain for one hour), while a set of rechargeable Ni-Cd transmitter

batteries is typically just 600mAh. In general, a sub-C Ni-Cd battery can be safely charged at twice to three times its capacity in millamp hours (for example, a 1700mAh pack can be charged at 3400 to 5100 millamps, or 3.4 to 5.1 amps), but the smaller cells must be charged at lower amperages. It's best to charge receiver and transmitter packs at 1 amp or less.

Do I have to discharge my battery before I recharge it?

Yes. Once a pack has been fully charged, it should be fully discharged before you charge it again (and you should let it cool before recharging it). If you aren't able to let the pack dump completely before you've finished running your car, that's OK; but don't "top off" the pack when you run the car again; just continue from where you left off. By completely discharging your packs, you'll train them to deliver maximum run time. If you repeatedly recharge a pack without ever completely discharging it, the cells will eventually develop "memory"; they

Novak Rhino

Novak's DC-only, 4- to 8-cell Rhino is controlled with a single start/stop button, and a rotary knob adjusts the unit's output from 0.5 amp to 10 amps. A single LED lets you know that the battery pack is charging, and voltmeter jacks are provided. The Rhino stays cool, courtesy of its internal fan, and a reusable air filter keeps track dirt and dust out of the works. Solid-state circuitry protects the Rhino against reverse-polarity hookups and thermal overload.



CHARGE!

The Rhino is a very dependable and cool-running charger, thanks to its internal fan. We had no trouble charging many packs one after the other, and the amperage was easily dialed down for charging receiver and transmitter packs. Our only gripe is with the Rhino's smallish amp-setting knob with its tiny numbers and the need for a separate DC power supply; we'd love to see an AC/DC Rhino. Those criticisms aside, the Rhino ranks highly as the most powerful charger in this guide, and it's small, so it's easy to stow.

- Charges at 0.5 to 10 amps
- Includes internal fan with air filter
- Solid-state reverse-polarity and overload protection—no fuses
- Tiny numerals on amperage dial
- DC power supply required

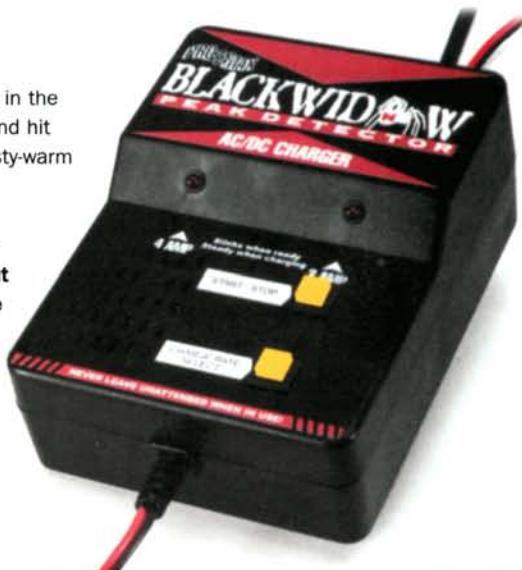
ProMax Black Widow

The AC/DC Black Widow is designed for 500 to 2000mAh Ni-Cds and charges at a user-selectable 2 or 4 amps. Two LEDs indicate which charge rate you have chosen and whether charging is in process or has been completed. The Black Widow charges 6- and 7-cell batteries. If a peak isn't detected after 45 minutes at the 4A setting or 90 minutes at the 2A setting, the unit automatically shuts down. The Black Widow also ceases to operate if there's a battery short circuit.

CHARGE!

Another no-brainer: just plug in the pack, select the amp rate, and hit "Start." Our packs were toasty-warm every time.

- Accepts AC or DC power
- Charge rate can be set at 2 or 4 amps but nowhere in between



will "remember" that you usually recharge them before they are fully discharged, and if you try to discharge them more deeply, they won't perform well, and your run times will suffer. NiMH cells are much less prone to this.

OK; so how do I discharge my batteries?

You could buy a "battery dumper" (or build one; we ran a "How To" on this in the February 2000 issue); if you just play around, you can simply run your vehicle until it slows to a crawl. You don't have to keep driving it at a crawl, just drive it until it slows. Some of the chargers in this guide also have low-amp dischargers that can be used to drain a pack further, but it takes a long time to dump a fully charged pack on one of the built-in dischargers.

What is "trickle-charging"?

A trickle-charge is simply an extra-low-amp charge. Many chargers

automatically go into "trickle" mode after completing a peak charge. There isn't much reason to fully charge a pack on trickle-charge alone; it takes hours and hours, and there's really no benefit.

A few words of caution: NiMH cells don't like to be trickle charged; when fast charging has been completed, take them off the charger.

What should I use to power a DC charger?

Direct-current (DC) chargers require 12 volts to operate. Automotive batteries are often used as a power source, but these are hardly portable, and clipping a charger onto an automobile's battery while it's under the hood of your car can be dangerous. Instead, consider getting a sealed, 12V "emergency starter" battery pack for field use; most auto-parts stores sell them, and they are meant to be portable.

The best way to power a DC charger is with a power supply meant for RC. Novak's N-Power is excellent, and you can also get high-quality units from Hobbico, Apex and others.

Back in 1987, IFMAR introduced something new to the off-road world championship format. Instead of 2WD and 4WD buggies competing against one another, they were separated into two classes, and for the first time there were 2WD and 4WD world champions. The first 4WD champ was none other than Masami Hirosaka, who drove a Schumacher CAT (competition all-terrain) to victory. Since then, Schumacher has continued to build its reputation as a manufacturer of world-class 4WD machines and has constantly refined the CAT platform; the culmination of this is the new CAT 3000.

No one can ever take away Schumacher's* achievement as the



HEAD to HEAD

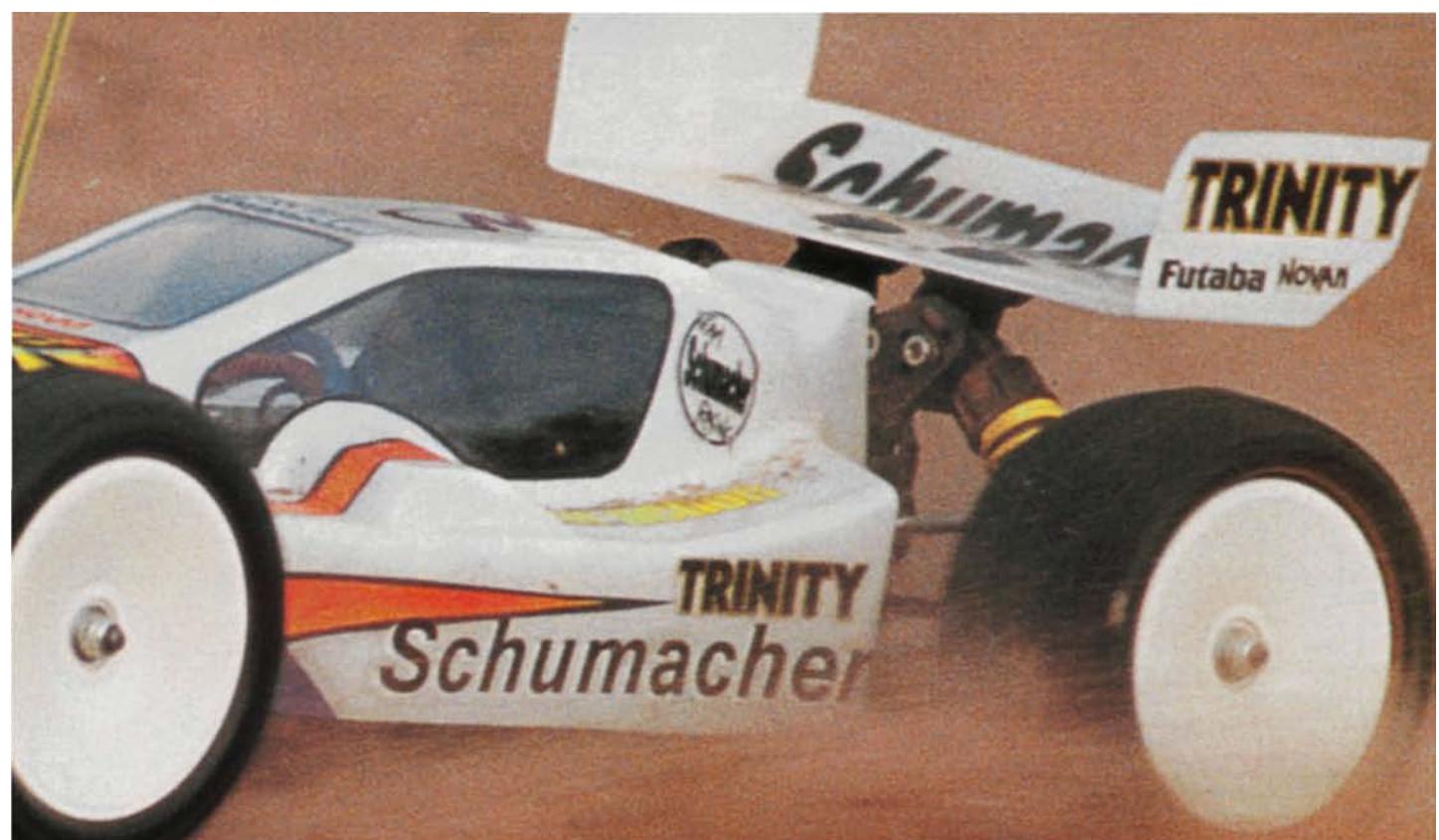
by the Staff of RC CAR ACTION

SCHUMACHER CAT 3000 VS.

builder of the first 4WD world championship winner, but other brands have won the title, too. The latest IFMAR 4WD champ is the Team Losi* Double-X4 (driven by Jukka Steenari, who ironically left Schumacher to drive for Losi); it's an innovative machine unlike any 4-wheeler that preceded it. While well-equipped in stock form, Losi pulled out all the stops after the Worlds and released a hopped-up version of the Double-X4 to capitalize on its victory.

Thus, the stage has been set for a head-to-head match: the original world champion's vision of race-winning 4WD technology is pitted against the current title holder, which is based on some very different ideas of what makes a front-running 4-wheeler. Who will win?





THE FIRST WORLD CHAMP

TEAM LOSI DOUBLE-X4 WORLDS EDITION

TAKES ON THE LATEST

PHOTO BY WALTER ROAS



TEAM LOSI DOUBLE-X4 WORLDS EDITION

The Worlds Edition is a replica of the Double-X4 Jukka Steenari drove to victory at the 1999 IFMAR Off-road World Championships. Not surprisingly, the kit includes many Team Losi upgrade parts, as well as the appropriate springs, Certified shock fluid and a setup sheet to help you duplicate Jukka's winning specs. The standard Double-X4 manual is supplemented by an in-depth addendum manual that explains the installation of the new parts and gives other setup details.

TECHNICAL FEATURES

■ **SEALED 3-BELT DRIVE TRAIN.** The Double-X4's completely enclosed drive train makes it impervious to contamination by track debris. The 3-belt configuration is required to accommodate the innovative forward-motor electronics layout, and Losi supplies its latest high-performance translucent belts but omits the rollers found on the standard Double-X4 (which most racers removed anyway). Both front and rear ball diffs use plastic outdrives, and the dual-disc slipper clutch is retained (one disc handles the rear wheels; the other disc takes care of the fronts). The Double-X4's adjustable "clicker" one-way system also returns. In Worlds trim, the clicker is equipped with a softer spring to reduce drag when free-wheeling. All parts spin on sealed ball bearings.

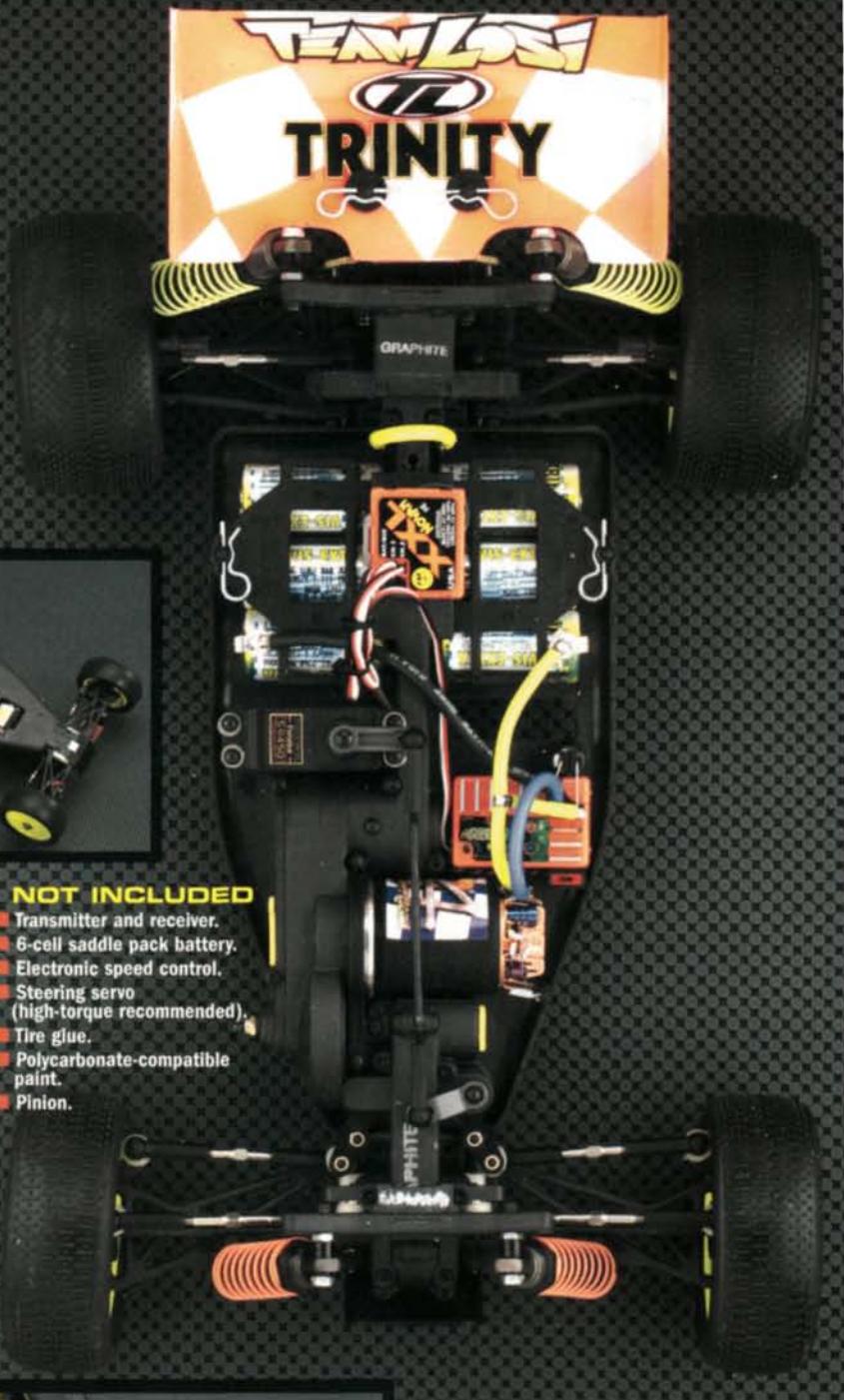
■ **GRAPHITE EVERYTHING.** All of the Worlds car's structural molded parts, including the suspension arms and shock towers, are made of Losi's graphite/plastic composite material.

■ **SLOTTED CHASSIS.** The Double-X4 Worlds chassis is slotted to lower the batteries (and in turn, lower the CG), and an extra slot allows the left-side pack to be moved forward on the chassis, as Jukka did. There is also an opening under the motor, and the Worlds motor plate has been retooled to take advantage of the extra clearance and hold the motor as low as it can go.

■ **NEW SUSPENSION AND STEERING SPEC.** There's a lot going on here; the shocks include threaded bodies, titanium-nitride shock shafts, Certified 25WT fluid, and orange front/yellow rear springs (these are softer than the standard kit's green/pink setup). But the most interesting suspension items are the front shocks' tiny internal springs; they are fitted beneath the pistons and soften bottom-out when the shock extends to full downtravel. This loads the spring, and that makes the shock more responsive to bump forces that compress the shock after full extension. Other suspension tweaks include new rear hubs (from the Double-X 'CR' buggy), and a stronger front bulkhead and rear arm mounts (these are white plastic and are also supplied with the latest standard Double-X4 kits).

Sealed ball bearings now outfit the steering bellcranks, and the inner Ackerman positions are used. Lunsford titanium tie-rods are standard equipment for the camber links and steering, but the long servo linkage is still Losi's steel piece.

■ **BODY, WHEELS AND TIRES.** Losi supplies its highly effective Taper Pin tires in Silver compound; dish rims replace the standard Double-X4's spoked rims for a more traditional racing look; and Losi's scoop-laden "hot-weather" body keeps air moving over the motor.



Right: you'll find more of the same trick stuff in the rear of the car. Losi's suspension geometry uses more shock travel to deliver a given amount of wheel travel than the CAT's geometry requires; this helps explain the Worlds' exceptional suspension action.

Left: a hearty front bumper protects the Worlds' front end. All the molded parts are graphite composite, and the threaded shock bodies, titanium nitride shock shafts, and titanium turnbuckles are all standard.



Schumacher



NOT INCLUDED

Transmitter and receiver.
6-cell saddle-pack battery.
Electronic speed control.
Steering servo
(high-torque recommended).
Tire glue.
Polycarbonate-compatible
paint.
Pinion.

Right: a mini-bumper is provided, but not shown here; it must be removed in order to take off the undertray. The hard-anodized shocks use foam volume compensators, and are very smooth.



Left: the steel hingepin bracket wraps under the chassis and also secures the undertray. The CAT's shallower-shock angles help it attack corners like a jungle, uh, animal (you thought we were gonna say "cat", didn't you?).



SCHUMACHER CAT 3000

The CAT 3000 is Schumacher's most innovative and conservative 4WD buggy. Conservatively, it now holds its saddle pack in the traditional 3-cells-per-side configuration, and the shocks that were nearly parallel with previous CATs' suspension arms now reach up to taller shock towers at a more conventional angle. But it's as innovative as ever with its mid-chassis motor placement and familiar, but unique, angled belt-drive system and "blade" drive shafts. The combination delivers Schumacher's best 4-wheeler to date.

TECHNICAL FEATURES

■ NEW CHASSIS LAYOUT. The interesting "side-saddle" battery placement of the previous CAT (all 6 cells were on the chassis' right side) does not return on the 3000, which favors a conventional 3-cells-per-side setup with an unconventional mid-chassis motor position.

The chassis is constructed of "S1" composite, which is often misrepresented as mere fiberglass. It's certainly "fiberglassy" in appearance, but it does incorporate carbon fibers, and it's stiffer and lighter than equally thick fiberglass stock. Schumacher had the material created specifically for RC use, and as such, S1 is non-conductive to reduce glitching and electrical "noise."

■ ANGLED DUAL-BELT DRIVE. The CAT 3000's dual-belt system is not unlike that of a typical touring car: A spur gear is connected to a layshaft with a pair of pulleys on it, and the pulleys turn front and rear ball diffs via belts. The entire system is placed on a slight diagonal (viewed from above) to keep the diff pulleys centered on the chassis; this allows narrower bulkheads to be fitted. The identical front and rear diffs are factory-assembled, feature aluminum outdrives and operate smoothly out of the box.

The clicker-type one-way front layshaft pulley uses a ratchet mechanism within the pulley to allow the front diff to freewheel while braking. Unlike the similar Losi design, the drag on the ratchet is not adjustable.

The CAT's spur gear is a unique Schumacher part with a boss that keys the gear to a crosspin in the layshaft. There isn't a slipper clutch or any other type of device to take the load off the gears when they're overtaxed or to help control wheelspin on loose surfaces.

■ LAYDOWN SHOCKS. Although still considered to be "laydown" compared with other cars', the CAT 3000's shock angles are downright steep by previous CAT standards and should increase traction over rough surfaces. The bottom-filled shocks have hard-anodized aluminum bodies and foam volume compensators in the seal cartridges, and they use an indexed two-piece piston that can be adjusted to selectively open or close holes for more or less damping. The rest of the suspension is conventional stuff: lower H-arms with hub carriers and steering knuckles held in check by steel-tumbuckle camber links. The shock towers are made of the same S1 material as the chassis.

■ MIP CVDS AND BLADES. Schumacher specs its own steel universals up front and genuine MIP CVDS in the rear. Both feature the Blade dogbone design, which uses a plastic pad (or "blade") to decrease wear on the crosspins and aluminum outdrives. The blades can be replaced when they wear out; this extends the life of the drive axles.

■ BODY, WHEELS AND TIRES. The CAT's drive train is completely exposed, and that isn't healthy for an off-road car with belt drive. To avoid trouble, the body is sealed tightly to a Lexan undertray with hook-and-loop tape, and this does a pretty good job of keeping crud out (but dump out the tray between runs, just to be safe). The CAT 3000 includes dish rims instead of the old 3-spoke models, but the tires you'll mount on them vary; U.S. kits get soft mini-pin tires with foam inserts for the hard-packed dirt tracks we prefer, while Euro models get firm rubber for grass use.

TESTING

A car's feel is important, but lap times are what matter most. With that in mind, we took the cars to Xtreme RC in New Milford, CT, for some timed runs on the bumpy East Coast-style track. The Schumacher went out first and was impressively fast down the track's back straightaway and broad, flat sweeper. The sweeper empties into a tight infield section with a large roller jump that calls for hard braking before leaving the ground—or you'll shoot your car past the hairpin that follows. The CAT handled this easily, and was able to roll on power mid-turn after touchdown without getting too out of shape. On the bumpy front straight, the CAT was jostled and had some trouble holding a line, although it did not seem to lose speed. Short, steep, curb-like jumps pepper the S-turns that follow, and the CAT popped over

these easily. Disregarding lap times with driver errors, the CAT 3000's average lap time was 20.8 seconds with a best lap of 19.9 seconds.

In terms of "feel," the CAT felt planted on the smooth sections, and turned beautifully—very neutral, with no push (unless you overcooked it entering a turn). It inspired less confidence in the bumpy sections, and braking in the rough was occasionally hairy, as the suspension had trouble keeping the tires firmly in touch with the track.

After a little grooming to "reset" the track, the Double-X4 was up. Losi's 4-wheeler went around the track with a completely different attitude. The suspension was much more active, and the chassis was noticeably more stable as the suspension arms pumped up and down in response to the bumps. The X4 also caught less air over the short, steep jumps and barely left the ground over the roller.

The Losi buggy seemed to pull a little more stick out of the Pro-Line tires and could get on the gas earlier when exiting turns; but it tended to push a little on the slicker sections of the track—particularly the sweeper turn and the last hairpin before the front straight, which always had a layer of loose fluff. We felt that a change to the outer Ackerman positions on the bellcranks would tighten the steering, but in the "box stock" spirit of the testing, we left the car alone. Nonetheless, the Double-X4 managed to beat the CAT's times and averaged 20.3-second laps with a best lap of 19.1 seconds.

WHO WINS?

In terms of pure performance measured by lap times, this one is too close to call; we ran the cars stone-

stock, and both could have benefited from additional tuning. For certain, the CAT 3000 could be dialed to match the Double-X4's times, but then the Double-X4 could be tuned to trim a few tenths ... then the Schumacher could be dialed a little more ... You know how that game goes because you play it every weekend! The fact that both cars worked well straight from the box illustrates the versatility of 4WD buggies, and these are the best rides going.

But we have to pick a winner here, so it comes down to driving feel, benchtop "performance" and value. In terms of feel, we have to go with the Double-X4 Worlds. It simply feels more in touch with the track, and you can confidently drive it hard. The stock setup pushed a little, but at least you know the push is coming before you enter a turn. When driving the Schumacher, we felt a little trepidation when powering down Xtreme's bumpy back straight, as there was always the chance that the car would take a weird bounce. On anything smoother, the Schumacher was fast and turned in better than the Losi. But as the lap times showed, the Worlds car was faster. Couple that with its laid-back feel on the track, and it looks as if the Double-X4 is in the lead.

But what about off the track? The Team Losi buggy's cleverly interlocking drive-train parts require much disassembly to remove any one of them. But again, because everything is sealed, you have to take it apart much less often. So would you rather take out a few screws frequently or a bunch of screws once in a while? In our book, it all evens out.

The same can be said of the Schumacher; its open diffs are prone to being contaminated despite its clamshell body and undertray, but it's so easy to get at everything that the between-runs maintenance is hardly taxing. Schumacher and Losi have very different philosophies on 4WD buggy construction, but we're willing to bet that the total time you spend wrenching on the cars in a season would be about the same. It's just a question of how the time is parceled out—either a little all the time, or a lot every so often.

That brings us to value, and for what is essentially the same price,

LOSI



The Worlds isn't hard to build, but it takes a while. Even if you're Joe Builder and you pride yourself on your wrenching speed, do yourself a favor and slow down. There are a lot of parts, and a lot of manual swapping (remember, the kit includes two), so take your time. You'll be rewarded with a great-running 4-wheeler.

Much disassembly is required to gain access to the layshaft, rear diff and rear belt if you need to remove them, but the rubber-plugged ports for gear-mesh sighting and clicker adjustment are handy. The holes in the belt covers that allow an Allen wrench to pass through to lock up the drive train for slipper-adjustment checks are also an inspired and welcome touch.

If the clicker plate does not slide on the flats of the layshaft with nearly zero detectable drag, the soft clicker spring will not have sufficient force to press the plate against the clicker pulley. Polishing the layshaft with fine steel wool will help if you have this problem.

In keeping with Jukka's setup notes, the bellcranks are assembled using the inner drag-link positions for increased Ackerman. This causes the bellcrank actuator arm to be offset when the steering is centered. Don't worry about it. If the arm isn't offset, it means that you jammed the arm on without regard for its indexing spline; you should reinstall it properly.

The Double-X4 does not have a traditional servo-saver, but the servo arm and bellcrank-actuator arm are soft enough to "give" in a crash. Unless you equip the car with a very inexpensive servo, you shouldn't have any servo problems related to the lack of a servo-saver.

COMMENTS

SCHUMACHER



Schumacher offers an adapter to fit standard spur gears in the CAT; this part makes it easier to change gears, and the drive train will run more efficiently with aftermarket gears. We found the stock gear very soft and flexible, and we had to replace it after a couple of runs.

Some of the CAT's screws look like ordinary Phillips-head types, but they're actually slightly different and call for a specific tool (although a Phillips-head driver will work in a pinch). Schumacher sells the correct Wiha driver.

You can't access the motor-mounting screws once the ESC has been taped into place. Schumacher solved this problem by mounting the ESC on a removable plate; instead of peeling off the ESC for motor access, you just have to back out a couple of screws.

The plastic straps that secure the batteries can be a bear to snap into place, but if you raise the hooked catches by placing a washer underneath each one, you'll be able to snap the straps on more easily without compromising their grip on the cells.

Crank the axle nuts on tightly so the friction-fit drive washers will grip the stub axles securely. Once installed, the drive washers stay put; to remove them for bearing access, you'll have to pry them loose.



the Losi Double-X4 packs in more features than the Schumacher. The Losi's titanium-nitride shock shafts, titanium turnbuckles, graphite composite plastics, Teflon-sealed bearings and adjustable one-way outclass the CAT's steel turnbuckles, plated shock shafts, "regular" plastic parts, shielded bearings and non-adjustable one-way pulley. None of the upgrade parts guarantees a better run on a given track than the Schumacher, but they do pay dividends in durability and consistency, and let's be honest: everybody likes having the cool stuff.

So, we pick the Team Losi Double-X4 Worlds Edition as our winner, but that doesn't make the Schumacher CAT 3000 the "loser." The CAT is a truly fine car, and we don't doubt that a better driver behind the wheel of a CAT will always beat a less skilled driver behind the wheel of a Losi. But with two drivers of equal skill, we feel the Double-X4 Worlds will be a little easier to drive a little faster—and that makes all the difference.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

TEST EQUIPMENT

Since we were interested in testing only the capabilities of the Team Losi and Schumacher chassis—not their tires or competing brands of electronics—we set them up with identical gear.

■ **NOVAK* CYCLONE ESC.** The Cyclone makes it easy to install the perfect wiring setup thanks to its top-mounted solder posts, and the factory-programmed profiles make it easy to tailor the ESC to your needs. We used Profile 1 (1/10 off-road) in both cars. Since the Double-X4 was equipped with a Cyclone TC, which includes different profiles, we used a Novak Pit Wizard to copy the "regular" Cyclone's profile into the Cyclone TC.

■ **TRINITY* D4 11X3 MODIFIED MOTOR.** Trinity's top-of-the-line motor was a natural choice for two top-of-the-line buggies. We could have installed an even hotter wind to match the Sanyo NiMH batteries we used, but we went for something just a little more tractable (relatively speaking, anyway; both buggies were ballistic). One thing we didn't have to install

was capacitors; they're already built into the D4's endbell.

■ **TRINITY SANYO 3000MAH NiMH BATTERIES.** These are the latest and greatest cells to hit RC. They're given Trinity's voltage-increasing system (VIS) treatment before they're matched and deliver some impressive numbers: try 6 minutes of run time at 30 amps on for size, with a punchy 1.111 average voltage.

■ **PRO-LINE* HOLESHTOP LP TIRES.** Since Schumacher and Losi both manufacture their own tire lines, we thought it made sense to go with Pro-Line rubber to keep everybody honest. The 4-wheelers hooked up well with the low-profile Holeshots in the M3 compound.

■ **FUTABA* S9450 DIGITAL STEERING SERVO.** The powerful S9450 delivers a claimed 111 oz.-in. of torque with a 0.09-second transit time. That's more than enough pull to keep a 4WD buggy pointed in the right direction, and the quick transit time helps hustle the buggies through the tight stuff.

FACTS AND FEATURES

	TEAM LOSI DOUBLE-X4 WORLDS	SCHUMACHER CAT 3000
WHEELBASE	10.66 in. (271mm)	11.18 in. (284mm)
WIDTH (F/R)	9.64/9.63 in. (245/244.7mm)	9.73/9.67 in. (247.1/245.6mm)
WEIGHT AS TESTED	56.01 oz. (1588g)	57.03 oz. (1,617g)
ARM LENGTH (F/R)	2.99/2.91 in. (76/74mm)	3.09/3.2 in. (78.6/81.4mm)
SHOCK TRAVEL (F/R)	0.66/0.92 in. (17/23.5mm)	0.61/0.79 in. (15.5/20.2mm)
SUSPENSION TRAVEL (F/R)	2.87/2.88 in. (73/73.3mm)	3.03/3.08 in. (77/78.3mm)
TRANSMISSION RATIO	2.3:1	2:1
DIFFERENTIALS	12 ball, 3/32 balls	9 ball, 4mm balls
DRIVE SYSTEM	3-belt	2-belt
FRONT ONE-WAY PULLEY	Adjustable	Non-adjustable
SPUR GEAR	84-tooth	95-tooth
CHASSIS	Molded graphite composite	S1 woven composite
DRIVE AXLES	Steel universals	Steel universal/steel MIP CVD (rear)
CLUTCH	Dual-disc slipper	None
SHOCK BODIES	Hard-anodized aluminum, threaded	Hard-anodized aluminum
SHOCK SHAFTS	Titanium-nitride	Plated steel
PISTON TYPE	Non-adjustable	Adjustable
SPRING RATES (F/R)	2.9/2.0	3/2
CAMBER LINKS/TIE RODS	Titanium turnbuckles	Steel turnbuckles
FRONT CAMBER POSITIONS (IN/OUT)	3/1	4/1
REAR CAMBER POSITIONS (IN/OUT)	11/3	4/3
FRONT SHOCK POSITIONS (UPPER/LOWER)	4/3	5/2
REAR SHOCK POSITIONS (UPPER/LOWER)	4/2	5/4
ACKERMAN POSITIONS	2	1
BEARING TYPE	Teflon-sealed ball	Metal-shielded ball
TIRES	Team Losi Taper-Pin	Schumacher Mini-Pin Silver compound
WHEELS	One-piece dish, 2.2 in.	One-piece dish, 2.2 in.
STREET PRICE (varies with location)	\$309.99	\$299.99

Holiday WISH LIST

by the Staff of RC CAR ACTION

THE BEST STUFF TO GIVE AND TO GET

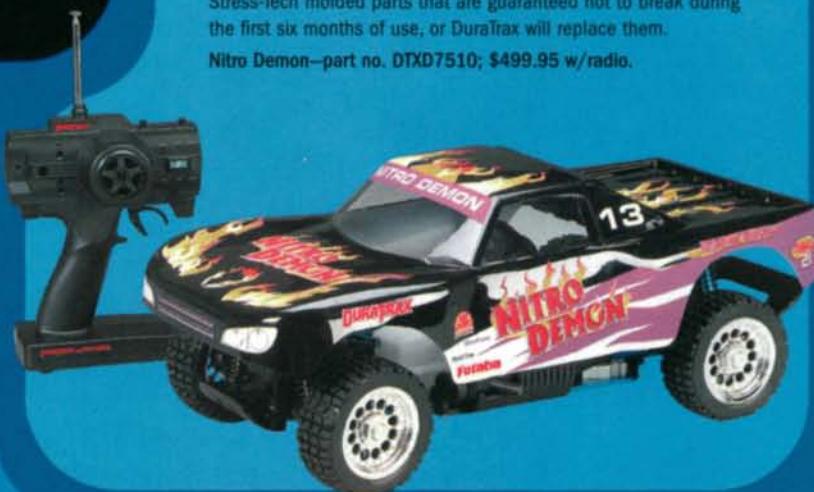
IT'S GIFT-GIVING TIME AGAIN, and that means you'd better get your list together or it's going to be another socks and underwear year. We've come up with our own list (and believe us, it's the short list) of this season's hottest RC items and placed them in this handy, colorful layout that can be "accidentally" displayed on the coffee table, kitchen counter or other conspicuous spot where it can be discovered by the generous gift-giver in the family. It also helps to circle stuff with a big black marker, but that's optional.

TRAXXAS T-MAXX AND E-MAXX

Nitro or electric? Ah, the heck with it—get both. This year's most exciting truck is offered with an EZ-Start-equipped .15 engine or dual-motor electric power (get the details in this issue's "First Look" at E-Maxx). The Maxx trucks are the best handling, most fun monsters ever to throw a roost, and any red-blooded RC fan should be happy to see chevron tread marks in the snow on Gift Day.

T-Maxx—part no. 4910; \$399.99 w/radio.

E-Maxx—3906; price not yet available.



DURATRAX NITRO DEMON

If you've seen the DuraTrax Axis and Nitro Quake, then you're already familiar with the $\frac{1}{8}$ scale buggy hardware under the Nitro Demon's stadium truck body. The Nitro Demon brings some changes to the DuraTrax RTR formula; the radio is manufactured by Futaba. Otherwise, you're getting the usual DuraTrax good stuff, complete with catchy names: Torq 21 engine with chrome-plated brass sleeve; Dura-Seal sealed radio box; Fiberite II dual brake discs; Rapid-Tune shocks; Clean-Fill 125cc fuel tank; and, of course, Stress-Tech molded parts that are guaranteed not to break during the first six months of use, or DuraTrax will replace them.

Nitro Demon—part no. DTXD7510; \$499.95 w/radio.

TRINITY POWER

Trinity has long been known as RC's top power broker, but only if you were talking electric. That all changed when Trinity hooked up with Picco and opened the throttle on the very popular R-C Speed engines. The Picco powerplants are offered in .12 and .15 versions with round or square exhaust ports and with or without pull-starters. Since you're going

to need fuel, Trinity has you covered with its Monster Horsepower blends and isn't shy about letting you know what's in the mix, right down to the life-extending 12 percent synthetic/racing castor oil lubricant.

Trinity hasn't forgotten the electrics, of course, and now has the latest Sanyo 3000 NiMH cells, enhanced with the VIS EX-tra process for increased voltage. Trinity was also first with the Panasonic 3000s and carries both brands in matched packs of varying grades as well as assembled stick packs.

As for motors, Trinity remains the most prolific innovator in both the stock and modified categories with the rebuildable P2K and matched-magnet D4 powerplants. Both feature built-in capacitors and efficient Copperhead all-copper endbell hardware.

Trinity Picco .12—part numbers vary according to starter/exhaust configuration; \$135 to \$150.

Trinity Picco .15—part numbers vary according to starter/exhaust configuration; \$150 to \$170.

Trinity Sanyo 3000 NiMH 6-cell assembled stick pack, VIS-Extra—SNT3007; \$63.

Trinity Panasonic 3000 NiMH 6-cell unassembled Ex-Tech—NR3006; \$75.

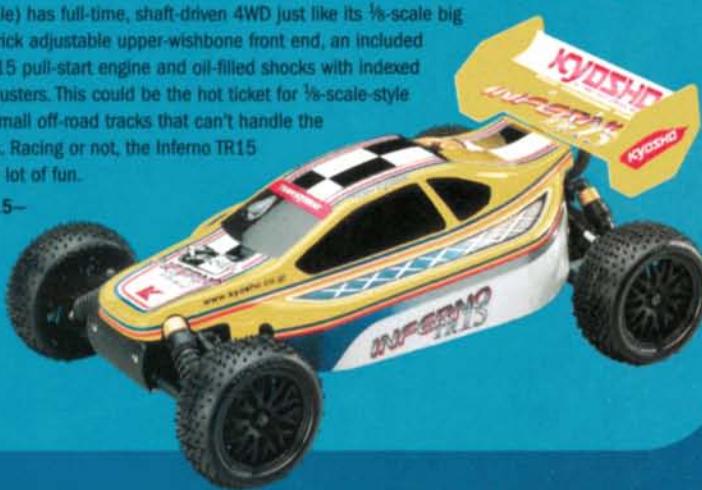
Trinity P2K—2116; \$29.99.

Trinity D4—part numbers vary according to the number of winds; \$59.99.

KYOSHO INFERNO TR15

We haven't built one yet; we haven't driven one yet, but we all want one. The baby Inferno (it's $\frac{1}{10}$ scale) has full-time, shaft-driven 4WD just like its $\frac{1}{8}$ -scale big brother, a trick adjustable upper-wishbone front end, an included Kyosho GS15 pull-start engine and oil-filled shocks with indexed preload adjusters. This could be the hot ticket for $\frac{1}{8}$ -scale-style action on small off-road tracks that can't handle the big buggies. Racing or not, the Inferno TR15 looks like a lot of fun.

Inferno TR15—
31091;
\$295.99.



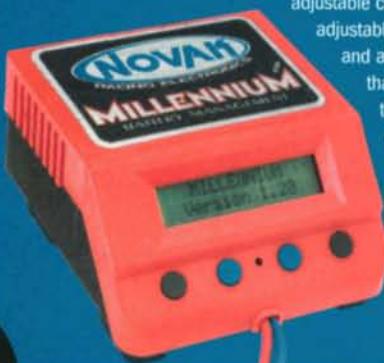
NOVAK MILLENNIUM CHARGER

This "Readers' Choice" favorite is the king of the high-tech charger hill, but it's easy to operate and very affordable (at least compared with chargers with similar features). The Millennium has it all: dot-matrix LCD screen with adjustable contrast; NiMH transmitter/receiver battery-charge mode;

adjustable amperage; linear and reverse pulse modes; adjustable button and alarm tones and, best of all, adjustable voltage threshold. What's that? The voltage-threshold setting determines the voltage drop that the Millennium "looks for" to signify a peak charge. You can set it extra low for NiMH packs, which tend to overheat when charged with the higher voltage-threshold settings of Ni-Cd-only chargers.

You'll need to pick up a DC power supply to go with the Millennium; may as well keep it all in the family and get a Novak N-Power for clean DC power.

Millennium—4480; \$149.99.
N-Power—4900; \$139.99.



Gifts for the hardcore RC guy

If you've been racing for a while, you've probably already got the latest competition cars and all the high-tech support gear to keep them running. Does that mean you can't have an RC holiday? No! There's a lot more to RC than the exotic stuff; in fact, some of the most lust-worthy gear won't even register on the cool-stuff radar until you see it and think, "Yeah; that's what I need!"

GS RACING SILICONE WIRE AND FUEL TUBING

Wouldn't you love a full spool of tubing or wire on your workbench? If you're a dedicated RC guy, you go through a fair amount of the stuff. Why buy it a few feet at a time when you can keep a seemingly endless roll on hand? In addition to the convenience of always having tubing and wire handy, a full spool makes your workbench look totally factory. And it's available in several colors!

Silicone wire, 100 feet—GSW14 (14-gauge)/GSW12 (12-gauge); \$51.99/\$73.99.

Fuel tubing, 50 feet—GS2452S/T; \$23.99.

ROBINSON ABSOLUTE GEARS

I'll take a full set, please. Robinson Racing Products is synonymous with great gears; we like the Absolute pinions and spur gears. The pinions are lightened and hard-coated, and the spurs feature a unique vibration damper

that makes them super quiet.

Best of all, the gears are precision CNC-machined for perfect mesh and are available in a wide range of sizes so

you'll always have the perfect gear ratio.

Absolute pinions—part numbers vary according to pitch and tooth count; \$4.75 each.

Absolute spur gears—part numbers vary according to pitch and tooth count; \$6.95 each.

PARMA FASKOLOR

Whether your holidays are filled with silver and gold or red and green, Parma has you covered—or colored in this case. The water-based Lexan paints are available in 44 colors. We'll subtly point out that the individual 2-ounce paint bottles are the perfect stocking-stuffer size. Heck—get the whole rack and string lights on it!

Parma Faskolor 2-ounce bottles—part numbers vary according to color; \$4.



Holiday WISH LIST

FOOLS FOR TOOLS

You can never, never have enough tools! Here are some classics as well as some new items that you can't live without.



TEAM KINWALD NUT DRIVERS

These things rule.

There's a little chamfer on the edge of the $\frac{1}{2}$ -inch driver to prevent it from gouging your car's shock caps when you're removing the mounting nuts, and the stubby design makes it easy to get to the slipper clutch without removing the right wheel. The handles offer plenty of torque, and a complete set of drivers can fit in one of the smaller compartments of your toolbox.

Kinwald nut driver set (0.05, 1/16, 3/32, 2.5mm)—TK3154; \$50.



OFNA SHOCK STAND

OK; you've got a shock body full of oil, but you forgot to snip the shock eyelet from the parts tree and install it in the shock cap before you poured.

Now what? Well, if you had an OFNA shock stand, you could

park those shock bodies while you worked on the rest of the kit. There's even a magnetic parts holder to prevent E-clips, snap rings, shock shafts and other items from disappearing (steel items, at least).

Shock stand—10910; \$7.95.

HUDY REAM

You're not still

twirling an X-Acto knife into your car's body to make holes, are you? Get a real reamer, like this King Of All Reamers from Hudy. This bad boy makes a perfect, smooth-edged hole with just a few turns. It's a must-have.

Reamer—107600; \$27.



DEANS BATTERY JIG

It's time to retire that old finger-style jig you've been slowly melting over the past five seasons. The Deans jig is awesome; as soon as you solder just one bar onto your pack and experience the magic of Deans' battery-bar-holder-thingee, you'll wonder how you ever got along without it. The best.

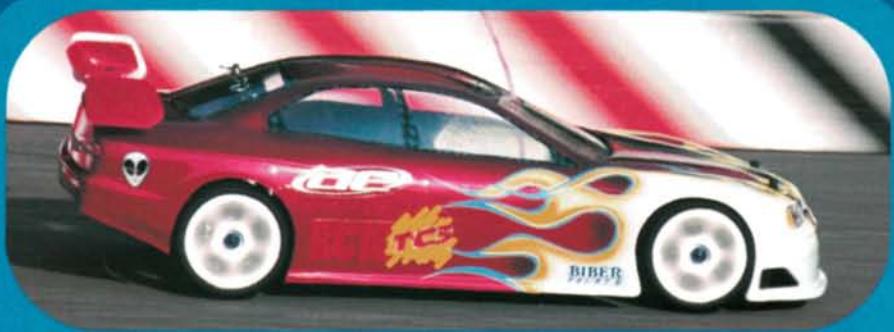
Deans battery jig—2040; \$14.95.

HUDY SET-UP SYSTEM

Hudy's impressive car-setup station works with all tourers, but it really shines when you have a pivot-ball car to dial in—like the Serpent Impulse (also on this list). Beautifully machined gauges slip onto the axles, and finely engraved lines indicate caster, camber and toe. Clever design makes it easy to adjust the car without removing the gauges, and Hudy's precision, flat-top setting-board guarantees accuracy. Not cheap, but worth every penny. But hey—what do you care? You're getting it as a gift!

Setup board—108200; \$114.

Universal touring car jig—109300; \$103.95.



ASSOCIATED TC3

There's nothing not to like about this "Readers' Choice" top pick. Though not the first to put shaft drive into a touring car, Associated definitely did it best. The TC3 can be had in a "Racer" version with rubber-sealed bearings, steel tumbuckles, composite MIP CVDs and your choice of three Protoform bodies (Accord sedan, Dodge Stratus or Alfa Romeo), as well as a "Team" kit with titanium tumbuckles, rubber- and Teflon-sealed bearings, blue-anodized aluminum VCS Macro shocks and aluminum CVDs—also in blue.

TC3 Racer—3010; \$179.99.

TC3 Team—3030; \$239.99.

TAMIYA WILD WILLY

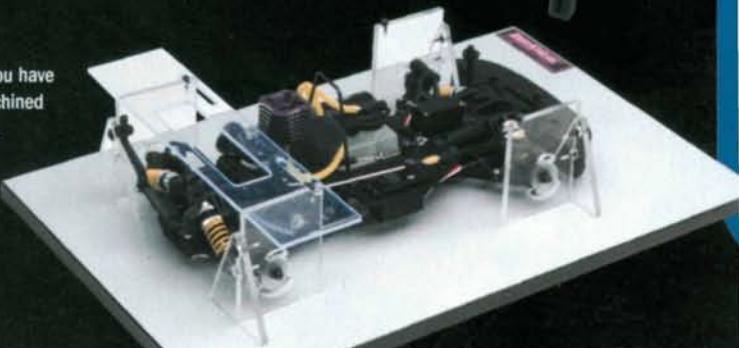


Tamiya's TA04 (tested this issue) may be garnering all the attention at the moment, but we're wishing for a case of the Wild Willys. Does the Wild Willy handle great? Not so great. Is it fast? Not really. Does it do crazy

wheelies? All day long! The Wild Willy is also incredibly tough, easy to assemble, a blast to drive and, thanks to the beautifully molded Jeep "hard" body and Wild Willy driver-figure, it's a lot of fun to detail. Did

I mention the Wild Willy is inexpensive? You—oops, I mean the generous gift-giver—can pick one up for the price of a good racing ESC.

Wild Willy—58242; \$134.99.



OFNA ULTRA GTP

Wait! This isn't just another touring car. That's an $\frac{1}{8}$ scale nitro buggy chassis under there, and that makes the Ultra GTP one big chunk of fun—especially when you consider that it's a ready-to-run with an Airtronics Blazer radio and Force .21 pull-start engine. OFNA started with an Ultra GT chassis, then added a new shock tower, road tires on plated 5-spoke wheels, a solid center drive with steel spur and a large foam front bumper. OFNA even throws in a spare set of wheels and tires to tear up the asphalt, and the McLaren bodywork just needs a coat of white paint and the included decals to be stylin'.

Ultra GTP McLaren—34315; \$669.95.



PRO-LINE MASHER 2000 AND MAXX MASHER TIRES

The original Mashers were cool, but the newest Pro-Line big-truck treads blow them away. Both the Masher 2000 (for all 2.2-inch rims) and Maxx Masher (for T-Maxx/E-Maxx) feature authentic-looking sidewall detail, soft-compound rubber and an interrupted chevron tread pattern that digs in like Wilford Brimley at an oatmeal-eating contest.

Masher 2000—1041; \$15.99.

Maxx Masher—1075; \$28.99.

DYNAMITE ULTRA START STARTER BOX

If your starter box looks as if it originally held a pair of size-20 hightops, weighs more than 10 pounds or is constructed like a bad washing machine, then it's time to upgrade to a sleek, light box like the Dynamite Ultra Start. It has custom alignment plates for the Team Losi GTX/NXT and Associated RC10GT so you don't have to play find-the-flywheel, and there's plenty of starting power, thanks to the dual-motor, bearing-supported, belt-driven flywheel. Add a pair of stick packs, and you have a full day's worth of easy starts.

Dynamite Ultra Start—
DYN5700; \$125.95.



HPI NITRO RUSH RTR

Let the other guys go racing; for 2WD nitro bashing around, the Rush is the rig to have. It has Nitro Star .15 pull-start power, a unique sealed tub chassis (and it's purple), tons of suspension travel, a slipper clutch, ball bearings, installed radio gear and a factory-painted body. Of course, you could hop it up and go racing if you wanted to ...

Nitro Rush RTR—560; \$299.99 w/radio.



TEAM LOSI TRIPLE-X AND TRIPLE-XT

Losi's top buggy and truck are terrific on their own, but when you have a matched set so you can take on the truck class and the buggy class, well, that's electric racing nirvana. The Triple-X and -XT are arguably the easiest-to-drive electric off-road racing machines, and they're simple to build and maintain. Add plenty of shared parts—most notably, the entire transmission—and the usual Losi competition features (you know, ball bearings, Hard Body shocks, dual-disc slipper ...) and you have a pair of boxes that will look great under any tree.

Triple-X—0981; \$214.99.

Triple-XT—A0073; \$219.99.

by Greg Vogel and Derek Buono

Drag racing's new top gun

The International Electric Drag Racing Association (IEDA), the sanctioning body of top-level radio-control drag-racing events in the U.S., Canada and Puerto Rico, announced that Kent Vahlsing has been named to take over its operations and will follow outgoing president Corbitt Marshburn.

Kent is a well-known, longtime competitor in the IEDA's Top Fuel Dragster and Funny Car classes and has won the IEDA world championship many times. He also runs the NorthStar Speed Shop and Dragway in Saint Michael, MN.

If you would like more information about the IEDA, contact Kent at (612) 497-8510 or at NRTHSTRRC@aol.com, or visit the IEDA website at IEDARCDRAG@aol.com.



Tamiya takes on a shifter cart

Gary Demory, senior customer service representative for Tamiya America, put his modified TB-01 up against a shifter cart at the recent second annual Momo Grand Prix shifter-cart race at Edison Field in Anaheim, CA (sponsored by Thrill Productions). Gary actually beat the cart in one of the races!



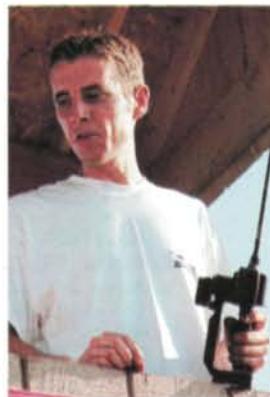
We always thought the TB-01 had real potential; looks as though we were right. Learn more about the event by logging on to www.thrillpromotions.com.



Fantom menace

Brian Dunbar has a new power behind his winning Losi cars; he has just switched over to Fantom. Brian will be running Killer Voltz batteries as well as Team Fantom stock and Factory Fantom modified powerplants.

VON MOSH MASHES THE COMPETITION



Mugen's Doug Von Mosh just pulled off another $\frac{1}{8}$ -scale off-road win at the recent Manufacturers Challenge at Real Raceway in Pleasant Hill, MO. Although the attendance wasn't as large as had been hoped because the Worlds was going on at the same time, the competition was rough, and Von Mosh managed to keep his Mugen MBX-4RR out front for the second leg of the Main. Congratulations to Doug on his win.

1/4-scale Midwest Nationals

The first leg of this tri-state shootout was held at Machesney Park, MN. Forty-seven cars in four classes (Sportsman, Sprint Car, Supertruck and Grand National) raced around the paved oval. The Grand National class was largest with 22 vehicles. Qualifying and Mains action was intense and exciting. Like the full-scale cars they are patterned after, the $\frac{1}{4}$ -scale machines raced to complete a certain number of laps, instead of the usual maximum number of laps in a given time. To make certain the race was won on the track and not in the pits, pit stops were allowed only under red-flag conditions. Congratulations to the winners and all who participated.

SPORTSMAN	GRAND NATIONAL
1 Larry Hopson	1 Eli Ezrow
2 Jim Bergman	2 Eric Condit
3 Bob Elliott	3 Roger Newell
SUPERTRUCK	SPRINT CAR
1 Sean Anderson	1 Wes Haton
2 Greg Hilber	2 Fred Murray
3 Larry Hopson	3 Randy Baker

SITE SEEING



WWW.RC10.COM

You're probably already familiar with RC10.com—Team Associated's information stronghold on the web—but you may not realize how frequently this site is updated. Find setup sheets for race vehicles—the T3, B3 and TC3, for example—from racers such as Mark Pavidis, Billy Easton and others. You can also view Associated's kit offerings, tips and upgrade parts. The site is constantly being updated with new products, too, so it's worth logging on frequently.

SPEED SHOP



Team Kinwold Triple-X parts

If you thought the Losi* Triple-X wasn't fast enough, Trinity* has some accessories to make the buggy even better. The blue-flake graphite front shock tower adds some extra rigidity, and new front brace and rear swaybar mounts make it easy to add swaybars. The machined aluminum motor plate, battery strap and rear pivot blocks (available in 0 and 2 degree) increase strength, enhance cooling and add style to your Triple-X.

Blue-flake graphite front shock tower—part no. TK5012, \$19.99; **blue front brace with swaybar mount**—TK5018, \$11.99; **blue adjustable rear swaybar mounts**—TK5019, \$14.99; **blue aluminum front bulkhead**—TK5009, \$29.99; **blue aluminum rear pivot block (0/2 degree)**—TK5015/TK5016, \$29.99; **blue aluminum lightweight motor plate**—TK5023, \$25.99; **blue aluminum battery strap**—TK5008, \$18.99.

OFNA one-piece tuned-pipe set

Rubber-coupled $\frac{1}{8}$ -scale pipes are a thing of the past (or soon will be, now that we have setups like this one from OFNA*). Slip-on couplers frequently tear or allow the pipe to slide out in a collision. The new, "one-piece" pipe design is actually several pieces: the manifold with a gasket at each end, the pipe and coupler springs. The springs hold the pipe and manifold tightly together to prevent blowouts or pipe ejection. OFNA's pipe also includes the pressure tap, has a polished finish and is very affordable, compared with some similar designs.

$\frac{1}{8}$ one-piece set, off-road—10077, \$75.95.



OFNA/Picco 0-1

If you're looking to strap some horsepower into your $\frac{1}{8}$ -scale, off-road buggy, you might want to check out OFNA's latest offering. OFNA has teamed up with Picco to distribute some of its .21 engines in the U.S. OFNA's name and engine designation are printed on top of the large heat-sink heads, but inside, they are the same high-quality, precision parts from Picco that make up a competitive and reliable race engine. You'll recognize the OFNA/Picco 0-1 by its all-black case and heat-sink head. Other features include a large-bore slide carburetor, rear exhaust and boost chamber.

.21 0-1 competition black engine—51216, \$399.95.



Mugen Seiki/Back Drop hop-ups for MTX-2



mass for quicker acceleration.

The new carbon-fiber brake disc improves braking performance compared with the stock piece. Long-wearing, low-friction Teflon pivot-ball pads are also available

Several hop-ups are available for the suspension. New springs are rated 1.6/1.7 and are available for the front and rear shocks, and a rear swaybar is available to dial in traction perfectly. For a finishing touch on the rear end of the car, Mugen's aluminum rear brace replaces the stock composite piece to reduce chassis flex.

Aluminum belt tensioner—K2204, \$159.99; **aluminum 18T pulley**—K2205, \$10; **aluminum 19T pulley**—K2206, \$10; **aluminum 24T pulley**—K2207, \$10; **carbon disc brake**—K2203, \$9.99; **Teflon pivot-ball pads**—K2201, \$10; **front springs (1.6/1.7 rate)**—H0523/H0524, \$4.50; **rear springs (1.6/1.7 rate)**—H0527/H0528, \$4.50; **anti-roll bar**—T0117, \$4.99; **anti-roll bar link parts**—T0116, \$5.99; **aluminum rear brace**—T0120, \$9.99.



Five Star aluminum shocks and HPI Super chassis



Five Star is a Japanese aftermarket supplier whose parts are available through California RC* (as are scads of other unique items from companies you may not have heard of). The bladder-equipped aluminum shocks feature threaded bodies for quick and precise preload adjustments and use a bottom-loaded double O-ring seal.

Five Star also offers a replacement chassis for the HPI Super series. The nicely machined chassis is beautifully finished and extra stiff at 3mm thick.

Aluminum shock set (pair)—FS-811, \$28; **aluminum Super RS4 3mm chassis**—FS-800PP, \$85.



5 QUESTIONS

Age: 30

Years racing: 25

Favorite track: Yatabe
ArenaSponsors: Yokomo,
Reedy, KO Propo, Jaco,
GM, Du'Mor, Pioneer,
Team SuzukiWhen I'm not racing:
I dream about racingMasami
Hirosaka

RCCA: Radio Control Action: How did you get started in racing?

Masami Hirosaka: I got started when I was 5 years old. My father was into racing and gave me a Tamiya Countach as my first car. From then on, I was hooked. The rest is history.

RCCA: Where do you feel your greatest competition comes from?

MH: It depends on the track and the circumstances. Sometimes, the Americans give me the best challenge, and other times, it is the Japanese drivers. The track really dictates which drivers are best. Certain tracks suit certain driving styles better than others.

RCCA: Is Masami all business, or does he know how to have fun?

MH: I have been racing for so long, it is all I really enjoy. I have learned to enjoy the competition. If I had to say when I enjoy myself the most, it would be when I am just fooling around with my friends.

RCCA: Do you feel that there is more pressure to win at home in Japan?

MH: There is great pressure to win at home. Even though I have been racing for quite some time, I still get butterflies in my stomach. I shake like the first time I was in a position to win the Worlds in 1987. It is really hard to lose that feeling in such a situation. It even adds to the pressure when there is a bigger crowd watching. One of my favorite places to race is in Hong Kong, where the crowds are really large. It reminds me how much fun it is to race.

RCCA: What would you tell someone who wants to follow in your footsteps as a world champion many times over?

MH: I would tell them to watch the faster drivers, and learn the techniques they use. Once you have watched the fast drivers and learned the track, then you can try to use the same techniques that make them fast.

UNDER THE HOOD

MASAMI'S WORLD'S-WINNING
ASSOCIATED/YOKOMO RC12L3 AND
YOKOMO YRX-2000



Masami's Associated/Yokomo 12L3 was equipped with a Reedy Fury 10x2 motor and Yokomo Sanyo matched 3000s to propel him to his World Championship victory. He also used a GM V12WE speedo and a KO Vantage radio system. The large capacitor you see soldered to the ESC aids in cooling the motor and battery. Masami geared the car with a 23-tooth pinion and a 98-tooth spur for the Yatabe track. He used TRC purple front tires and Jaco aqua rears, and he topped off the car with an Andy's Mercedes body.



The Yokomo YRX-2000 is the top of the line 1/10 on-road pan car in Japan. It's possible that the 1/10 class will be eliminated in future world events, so you may be looking at the last winner in this class. Masami used matched Yokomo 3000s and a Reedy Fury 8x3 motor to power his car to the win. His YRX car was also equipped with a GM V12 W ESC and a KO Vantage radio system. He used TRC magenta tires in the front and Jaco pinks in the rear, and he geared the car with a 19-tooth pinion and a 120-tooth spur.



HOT MOD HOW TO

RELOCATING A FUEL TANK'S PRESSURE TAP

Right now, many of you are saying, "What are they talking about? My tank already has a pressure tap." If you run a $\frac{1}{10}$ vehicle, the pressure tap is probably in a place that causes the pulses from the exhaust to churn the fuel and increase foaming, and this can cause the engine to run lean. We've seen many racers relocate the pressure tap to the tank's lid, so it's farther away from the fuel. Here's how to do it.

■ STEP 1. Remove the pressure line from the tank. You may also want to remove the tank so it is easier to work on.



■ STEP 2. Now we have to plug the old pressure hole. Cut off the plastic nipple, and tap the hole with a 4-40 tap. Apply a bead of silicone around the tapped opening, and install a short 4-40 buttonhead screw. To help seal the hole, you can also slip an O-ring over the screw before you install it.



■ STEP 3. Determine which size of drill bit you will need to make a hole for your new pressure tap; we used an $\frac{1}{8}$ -inch bit for our OFNA pressure nipple. Drill a hole in the top of the lid and in the O-ring retaining cap. Tap the hole with a tap that corresponds to the thread size of your new pressure nipple.



■ STEP 4. Screw the pressure nipple through the top of the cap. You may need to trim the support ribs on the top of the lid to screw the tap in all the way. You may also want to apply some silicone around the base of the nipple to help seal it to the lid.

Now your tank will look like a smaller version of an $\frac{1}{8}$ -scale buggy's tank. The relocation of the pressure nipple will reduce the air that causes foam in your fuel tank.

LAST LAP

The 27-turn stock motor has been with us since the days of 1200mAh cells. Is it time to change stock-motor specs to a lower wind to better exploit the far greater capacity of today's high-performance 2000, 2400 and 3000mAh batteries?

I believe that stock racing should stay exactly the way it is. With the higher-turn motors, cars go slower than those that run lower-turn, modified motors, and this allows for close, exciting racing. Stock-motor classes should be developmental levels for younger, less experienced racers to hone their driving skills. Speeding cars up by using lower-turn motors will only cause more wrecks and broken gear and will make RC racing more daunting to someone who's just getting started in the sport.

—Michael Crowley

I think that would be a great idea. Everyone is coming out with these 3000mAh batteries, and they are still powering the old-school motors.

—Danny Basye

Are you kidding? Stock motors are already fast enough (too fast for some folks). Why change the number of winds when the motor technology has yet to be fully developed? Until the motor technology ceases to progress, I wouldn't even consider it. In fact, I'd rather see more spec motors with zero modifications allowed at more races. If you want to go fast, run a modified!

—Jason Gold

Stock racing is just too slow. There has been much more activity at my track since we dumped "stock" class for a "spec" class with Chameleon motors. The cars are more exciting to drive but still much easier to control than cars with low-wind motors.

—Harold Loskey

I feel it's time to advance our efforts in stock motors. Today's technology has rapidly evolved, and to harness it with the batteries, the motors must advance as well. We spend top dollar for good batteries; why not spend top dollar for good stock motors, too? As a club racer and a "Big Race" participant, I would be very interested in seeing stock motors get the "update" treatment as well.

—Rommel Almanza

NEXT MONTH'S QUESTION

What is the best RC video game or simulation you've played?

Respond by clicking "Last Lap" at www.rccaraction.com, or email your responses to gregv@airage.com.

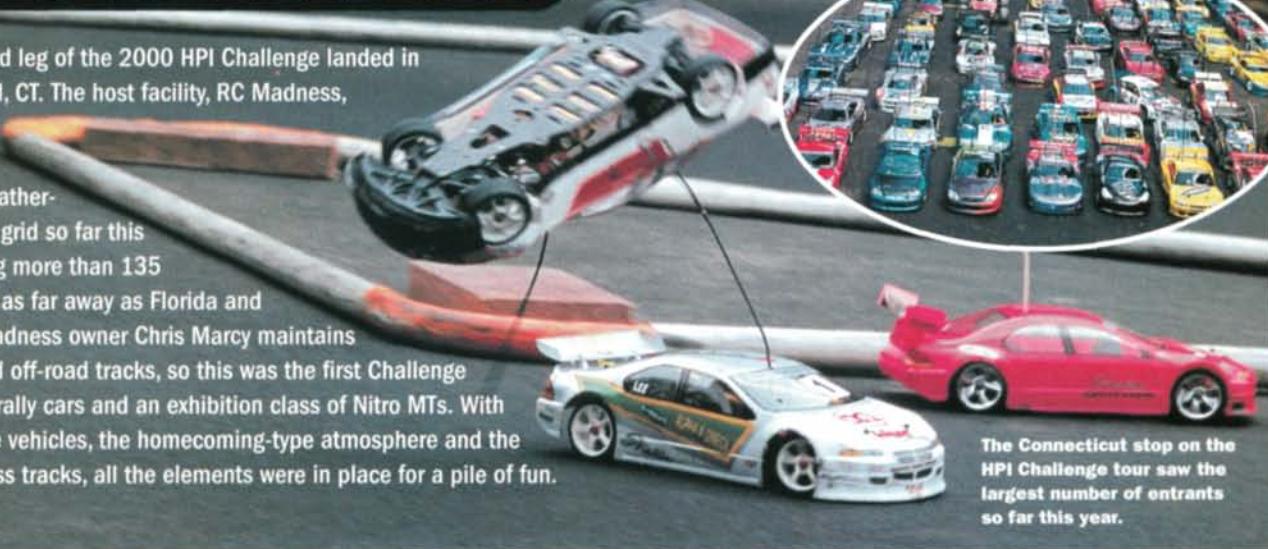
sponsored by

KYOSHO
THE FINEST RADIO CONTROL MODELS

HPI CHALLENGE

by Bob Hastings

The third leg of the 2000 HPI Challenge landed in Enfield, CT. The host facility, RC Madness, saw the factory-sponsored gathering's largest grid so far this year, drawing more than 135 entries from as far away as Florida and Missouri. Madness owner Chris Marcy maintains both on- and off-road tracks, so this was the first Challenge to welcome rally cars and an exhibition class of Nitro MTs. With HPI's diverse vehicles, the homecoming-type atmosphere and the dual Madness tracks, all the elements were in place for a pile of fun.



The Connecticut stop on the HPI Challenge tour saw the largest number of entrants so far this year.



An exhibition class of Nitro MTs makes its way around the twisty off-road course.



This was the first time that the HPI Challenge featured rally cars in competition.



This picture is actually upside-down; the car on the right is right-side up—made you look!

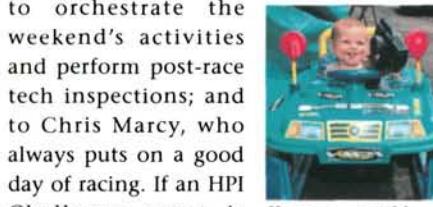


Tyler Swartz and his brother had such a good time at the Florida HPI Challenge, they made the trek to Connecticut.

According to HPI, "The HPI Challenge is technically a competition, but the primary goal is to have fun and meet fellow RC enthusiasts." As if camaraderie wasn't compensation enough, each entrant received a new HPI body and hat. Podium finishers in each class received plaques for their achievements, and the top qualifier also took home a new HPI kit.

The rally division epitomized the atmosphere of fun during the weekend. Unlike in traditional qualifier/Main events, the 11 participants ran a total of six rounds with

Judging from the smiles, the HPI Challenge met its objective of fun; new friendships were begun, and it wasn't long before folks were discussing plans for next year's outing. Special thanks go to HPI's webmaster, Frank McKinney, and customer service manager Steven Baker, who were on hand from California to orchestrate the weekend's activities and perform post-race tech inspections; and to Chris Marcy, who always puts on a good day of racing. If an HPI Challenge event is scheduled near you, you'll definitely find it's worth attending.



*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■



A-MAIN RESULTS

HPI Electric RS4

- 1 Gary Acey
- 2 Jayson Livingstone
- 3 Ashton Brinson
- 4 Mark Smyka
- 5 Bill Hamlin

HPI Nitro RS4 Open

- 1 Mike McMahon
- 2 Richard Wechter
- 3 Pedro Cruz
- 4 Everett Nievera
- 5 John Firsching

HPI Box-stock Nitro RS4

- 1 Steve Silva
- 2 Harry White
- 3 Sean Norgaard
- 4 Rick Birk
- 5 Trevor Swartz

HPI RS4 Rally

- 1 Nick Bader
- 2 Dick Pearson
- 3 Del Gonzalez
- 4 Brian Sullivan
- 5 Shane Potenski

HPI Super Nitro RS4 Open

- 1 Ken Tuttle
- 2 Harry White
- 3 Richard Wechter
- 4 Jamie Raynor
- 5 Tyrone Milton

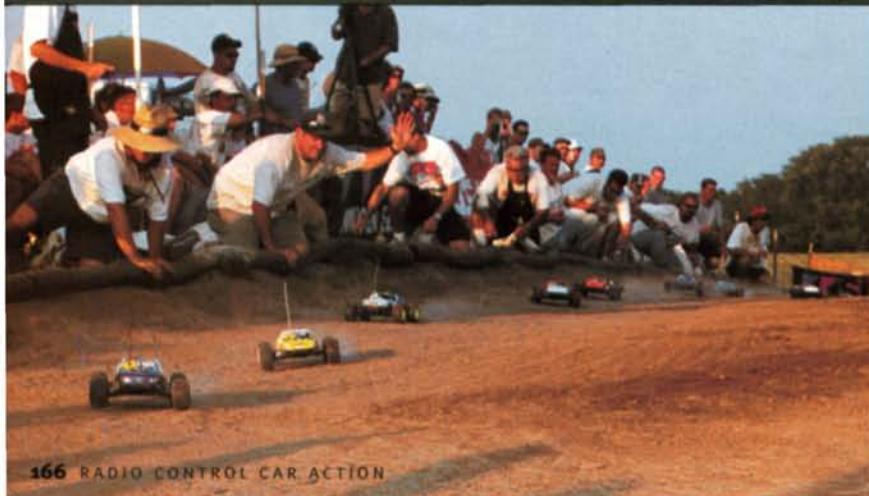
Concours competition

- 1 Ruben Williams's Subaru Impreza
- 2 Tyrone Milton's Toyota GT-One
- 3 Ray Powell's Porsche 911



ROAR Off-Road Fuel Nationals

by Greg Vogel



THE SURGING POPULARITY OF NITRO POWER IS UNDENIABLE. The strong attendance and amazing competition at this year's ROAR Off-Road Fuel Nationals clearly showed it. All the major manufacturers were there with their latest hardware, and RC's top drivers were all after a spot on the piston-power podium. You may not readily connect the names of some of these drivers with nitro power; among them was Brian Kinwald, who made his national $\frac{1}{8}$ -scale debut behind the wheel of a Kyosho Inferno MP7.5. But that was just one of this action-packed weekend's stories; here's how the whole thing went down.

PHOTOS BY GREG VOGEL



Above: Trinity engine guru Ron Rosetti was on hand to help out in the Trinity/Losi camp. He also raced his Losi Triple-X-NT in the $\frac{1}{10}$ truck class.

Right: Matt Francis finished an impressive third in the truck A-main after bumping up from the B-main.



Sponsored by Mugen Seiki ■ Kyosho ■ Associated ■ TTR ■ O.S. ■ Futaba ■ O'Donnell

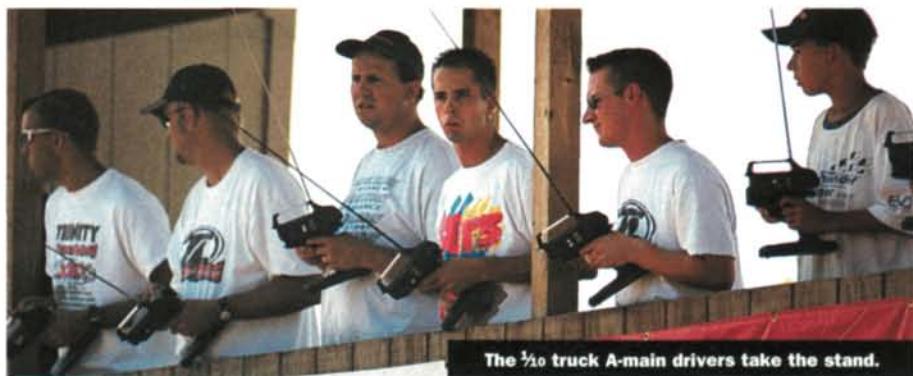
KINWALD AND KYOSHO TAKE COMMAND, SAXTON CASHES IN, AND THE ASSOCIATED GT JUST KEEPS ON WINNIN'



ROAR OFF-ROAD FUEL NATS

QUALIFYING

Qualifying started on Friday. The rounds went like clockwork, with brief pauses after every third one during which staff watered the track. Some racers complained that the water made the track slick, but by then, it was too late to change the format because it wouldn't have been fair: the first group had run on the wet stuff while the second group would have smoked their times on a blue-groove dry surface.



The $\frac{1}{10}$ truck A-main drivers take the stand.



REAL RACING

Missouri's Real Raceway hosted the Fuel Nats this year. It's an excellent facility with a huge roof for the drivers to pit under and escape from the sun, but the race was so well attended that some had to set up additional canopies.

Real's tall drivers' stand ensures a good view of the track, while a room next to the stand houses the computer system and was home to the dedicated scorer. Track workers staffed the radio impound and kept the transponders circulating. Thanks to their efforts, the event went smoothly. (By the way, it's always cool to thank the track operators when you attend a big event.)

As for the track itself, the Nats setup was large and challenging with a long straight for the cars to wind out. My only gripe? I was covering the event instead of racing in it!

On the second day, the track wasn't watered and it grooved up nicely; the drivers took advantage of this to lay down some very quick lap times. At the end of the day, it was suggested that a few of the lower Mains be run then to allow more time for Sunday's longer Mains, but the drivers said they preferred to run all the Mains on Sunday.

THE MAINS

- $\frac{1}{8}$ Truck. The big story here was the Megatech contingency program. In case you haven't heard about this deal, Megatech put up 10 Gs for any winning driver who ran a Megatech engine in one of seven posted races. "King" Richard Saxton saw an opportunity to make a quick buck and built a special TTR truck to compete in the Nats' $\frac{1}{8}$ -scale Truck event.

Saxton had his truck dialed and qualified first. The Main was set for half an hour and all the trucks had been prepped to make the distance. At the tone Saxton left his spot on the grid in a hurry and never looked back; if he did, he would have seen a close Dean Sexton (second qualifier) and Jay Schaffer (fourth qualifier). Saxton throttled his truck over the line for the win with 63 laps; Sexton rolled in second with 61; Schaffer took third only 4 seconds behind.

- $\frac{1}{10}$ Truck. In the truck categories, it was Saxton's weekend. In $\frac{1}{10}$, he posted the weekend's fastest time with his Associated GT and

SAXTON'S MEGATECH MONEY MAKER



Richard Saxton's pit crew consisted of master mechanic Regan Leblanc (left) and engine guru Steve O'Donnell (right).

"KING" RICHARD SAXTON was looking to cash in on Megatech's contingency program. The \$10,000 purse was still up for grabs and he had every intention of going home with the check. How did he do it? Well, he had his master mechanic, Regan Leblanc, build a bulletproof Thunder Tiger EB-4 truck that was more than capable of lasting the 30-minute Main. Regan outfitted the truck with special nylon arms, a custom body-mounting system and custom-cut Kyosho tires for grip, and he topped it all off with a Kyosho $\frac{1}{8}$ stadium truck body.

For tweaks to the bread-winning component—the all-important Megatech SH engine—Richard turned to engine guru Steve O'Donnell. Steve did his



Saxton shows some style on his way to the win.

sat first on the starting grid. The other stories were of Team Losi's Matt Francis and Kyosho's Greg Degani, who bumped up to the A-main after placing first and second, respectively, in the B-main.

It was a good start for the most part, but there was a lot of shuffling. Matt Francis made the biggest move and quickly drove his Triple-XNT to the front. The youngest driver on the stand, Jarred Tebo of Team Associated, was strong in the opening laps but retired early with mechanical problems. Todd Hodge and Scott "The Squirrel" Hughes also suffered technical difficulties and spent most of the race in the pits.

Up front, Billy Easton pressed Saxton several times, but the King kept his cool and held his lead. Easton had to contend with a close Matt Francis, who knocked on his door for the entire race; in fourth, Associated's Mark Pavidis kept Losi's Adam Drake at bay.

Kyosho's Jeremy Kortz also had a good showing with his Ultima ST, but by the end, a few bobbles had sent him back to seventh, behind Kyosho teammate Greg Degani. At the end, Saxton took down another impressive win, and everyone in the pits was asking, "Will he win it all?"

• **1/8 Gas Buggy.** Billy Easton put his TTR ride up front after an impressive qualifying run. With his Inferno MP7.5, Mark Pavidis, in his Team Kyosho debut, also laid down some fast laps in qualifying and earned the number-two slot on the grid behind Easton. Chad Bradley (Team Kyosho) and Jarred Tebo were the notables who made their way into the bump-up positions from the B-main.

As starting time approached, daylight had almost gone, but the lights were turned on and the race was soon under way—with the extra challenge of scattered shadows and dark



Whenever I see Kinwald, he's cutting tires. Here, he is making 1/8 buggy tires out of Losi truck tires.

the beginning of the race, there was so much place swapping that if it hadn't been for the autoscore system, it would have been almost impossible to tell who led which lap. After a few laps, the picture was clearer: Tebo led with Easton and Kinwald close behind.

As the race continued, the tension increased. Kortz left early and was soon followed by Saxton. With this DNF, he was out of sweep contention. After a strong first half, TQ Billy Easton also succumbed to bad luck; while this was going on, Kinwald's Inferno MP7.5 moved into the lead, with Tebo's EB-4 close behind. Kinwald held on for the win, and Kyosho's Degani and Pavidis followed a few laps behind in third and fourth.

WRAP-UP

Even though the Mains had to be wrapped up after sundown, they ran smoothly and successfully. The Real Raceway

spots. During crew did all they could to accommodate everyone fairly.

Congratulations to Team Kyosho, Team Associated and Team Thunder Tiger for their 1/8 Buggy, 1/10 Truck and 1/8 Truck victories, to Richard Saxton for his Truck wins and

The Missouri sun had dried out Real Raceway's track, so the high-powered nitro trucks and buggies whipped up the dust into clouds like something out of Steinbeck's "The Grapes of Wrath." In an effort to improve the track's consistency from round to round



When the track had been watered, it was pretty muddy.

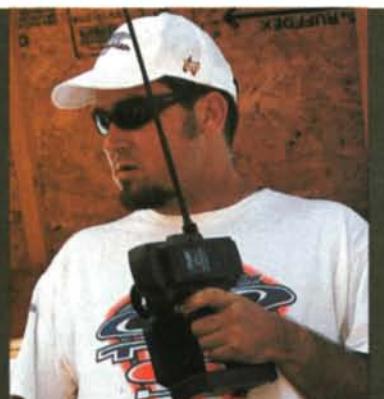
and prevent "rocket rounds," officials watered it down after every third round. But invariably, the racers who ran immediately after the watering suffered a slicker track and slower lap times (I guess you could call those "snail rounds").

For the second round, the racers were shuffled and the watering schedule was altered, but the varying track conditions allowed racers in some heats to have better runs than others. After hearing out the drivers, the officials suspended the watering for the following day's qualifying. Then the track grooved up and the drivers laid down quicker laps on a consistent track.

The moral of the story? Racers and track operators have to work together, as they did here. Griping to your buddies doesn't make a difference; discussing a problem with the people who can fix it will actually get something done.



When it was dry, the track was dusty, but it grooved up and offered lots of traction.



Saxton prepares for his truck race—looking pretty calm, considering the 10 grand on the line!

thing to make sure the engine would run reliably and put out enough crazy power to keep Richard ahead. The combination was right that day; the truck looked as if it handled as well as a buggy.

The Megatech engine was no small part of his success; it had enough rip to lift the front wheels! Richard took the win with two laps more than the second-place driver, walked off the stand with a huge grin and congratulated his team on an excellent effort. After his big payday, he probably even bought them all dinner and let them supersize it.

Race Format

Each class ran three qualifying rounds on Friday. On Saturday, the drivers were sorted into heats according to their lap times, and they ran another three rounds of qualifying. After that, the Mains were determined by sorting through the best times again, but only eight racers were scheduled for each Main. The ninth and 10th positions were left open for bump-ups. Drivers who placed first or second in a Main were automatically bumped up into the next Main.

The C-main and lower mains ran 15 minutes; the B-mains and the $\frac{1}{8}$ Truck Main ran 30 minutes; the two A-mains ran a grueling hour to determine the champion.



1/8 Buggy A-main



1/10 Truck A-main



1/8 Truck A-main

Megatech payday, and a big round of applause for Team Kyosho's newest member, some guy called Brian Kinwald, who took the win in his first $\frac{1}{8}$ off-road national event. ■

WINNERS

1/8 BUGGY

1/10 TRUCK

1/8 TRUCK

FIN.	QUAL.	DRIVER	VEHICLE	ENGINE	PIPE	FUEL	RADIO	TIRES (F/R)
1	8	Brian Kinwald	Kyosho MP7.5	O.S.	Picco	Trinity	Airtronics	Champion
2	10	Jarred Tebo	TTR EB-4	-	-	O'Donnell	Airtronics	-
3	4	Greg Degani	Kyosho MP7.5	O.S.	O.S.	O'Donnell	Futaba	Pro-Line
4	2	Mark Pavidis	Kyosho MP7.5	-	-	O'Donnell	Airtronics	Pro-Line
5	7	Austin Dvorak	Kyosho MP6	NovaRossi	NovaRossi	O'Donnell	Airtronics	Pro-Line
6	3	Scott Hughes	Kyosho MP6	O.S.	Kyosho	O'Donnell	KO Propo	Pro-Line
7	9	Chad Bradley	Kyosho MP7.5	O.S.	Kyosho	O'Donnell	JR Racing	Pro-Line
8	1	Billy Easton	TTR EB-4	Top	NovaRossi	O'Donnell	Airtronics	Champion/Atomic
9	5	Richard Saxton	TTR EB-4	NovaRossi	NovaRossi	O'Donnell	JR Racing	Champion
10	6	Jeremy Kortz	Kyosho MP7.5	O.S.	Kyosho	Blue Thunder	JR Racing	Pro-Line
1	1	Richard Saxton	Associated GT	NovaRossi	O'Donnell	O'Donnell	JR Racing	Losi
2	4	Billy Easton	Associated GT	Mugen	Associated	O'Donnell	Airtronics	Pro-Line
3	9	Matt Francis	Losi Triple-X-NT	Picco	Losi	Trinity	Airtronics	Losi
4	8	Mark Pavidis	Associated GT	Mugen	O'Donnell	O'Donnell	Airtronics	Pro-Line
5	5	Adam Drake	Losi Triple-X-NT	Picco	Picco	Trinity	Airtronics	Losi
6	10	Greg Degani	Kyosho Ultima ST	O.S.	Kyosho	O'Donnell	Futaba	Pro-Line
7	7	Jeremy Kortz	Kyosho Ultima ST	O.S.	Kyosho	Blue Thunder	JR Racing	Pro-Line
8	2	Todd Hodge	Losi Triple-X-NT	Picco	Losi	Trinity	Airtronics	Losi
9	3	Scott Hughes	Associated GT	Mugen	Associated	O'Donnell	KO Propo	Pro-Line
10	6	Jarred Tebo	Associated GT	Mugen	O'Donnell	O'Donnell	Airtronics	Pro-Line
1	1	Richard Saxton	TTR EB-4	Megatech	Megatech	O'Donnell	JR Racing	Kyosho
2	2	Dean Sexton	Kyosho	O.S.	O.S.	O'Donnell	Airtronics	Kyosho
3	4	Jay Schaffer	Kyosho MP-6	Omega	Omega	O'Donnell	Airtronics	Kyosho
4	6	Edward Wong	Kyosho MP6	O.S.	Kyosho	O'Donnell	KO Propo	Kyosho
5	5	Stephen Pocs	Kyosho MP6	O.S.	RB	O'Donnell	KO Propo	Kyosho
6	3	Melvin Nelson	Ultra Worlds GT	Megatech	Paris	Wildcat	KO Propo	OFNA
7	7	Dennis Glaser	Mugen MBX-4	Megatech	Paris	O'Donnell	Futaba	OFNA

- Driver did not supply information

Bulletproof your Vehicle

8 stay-tough tips

by Derek Buono

RC vehicles of all types are subjected to stresses that would destroy full-size cars if the forces were "scaled up" and applied to them. It's truly amazing what the typical RC car can take, but all cars have their limits. This article will show you how to extend those limits and help ensure that your car makes it through all three qualifiers and the Main in one piece (or that it lasts for a full day of backyard fun without a trip to the bench). None of these tips is very complex or expensive, so why not give them a try?

1 Install titanium turnbuckles

Most kits come with steel camber links that are generally strong but will bend if loaded just right. Titanium simply won't bend or break (and if you do crash hard enough to tweak titanium, the turnbuckles will be the least of your broken-part worries). Lunsford* titanium tie rods are the most popular and are sold in a wide variety of sizes, from itty-bitty touring-car lengths to long truck links and even fat, $\frac{1}{8}$ -scale sizes. Lunsford also offers Ti hinge pins for many vehicles. If you replace the turnbuckles and hinge pins, it's less likely that one will bend or break and potentially end your run.



2 Seal the transmission

Most tranny cases have a good seal, but even the tightest cases may allow dust into the tranny. A thin film of grease between the tranny halves followed by a wrapping of decal material or vinyl tape over the seam will just about eliminate any chance of grit entering the tranny. Replacing the large diff bearings with sealed bearings will also reduce the chance of contamination.



3 Apply thread-lock to all metal-to-metal connections

Nitro vehicles require more thread-lock because they usually have more screws that thread into metal, but all RC cars can benefit from the strategic application of thread-lock. Top spots include jam nuts that secure ball ends, setscrews in outdrives, wing button screws, diff screws and output-shaft screws in metal-gear servos. On nitro vehicles, be sure to hit the engine-mounting screws, the linkage-collar setscrews and the screw that holds the clutch bell on the crankshaft if your car does not use an E-clip. Wherever you find screws threaded into metal, apply thread-lock.



4 Install captured ball cups

The ball cups included with most kits grip their ball ends well and won't pop off unless you really clobber something. But as the cups are popped on and off for maintenance, and as they wear with use, they loosen and come off more easily than they should (such as when someone taps your car in a corner). You could replace them regularly as insurance against such mishaps, but your best bet is to install captured ball ends. GS Racing* makes the parts shown, and you can also get captured ball ends from Du-Bro*, OFNA* and other sources. Install the ball ends with a pan-head screw or washer over the ball, and they simply can't pop off. A warning, though: if your car pops ball ends because you hit everything in sight, leave them in place; the pop-off action is probably sparing your car from having broken arms and hubs.

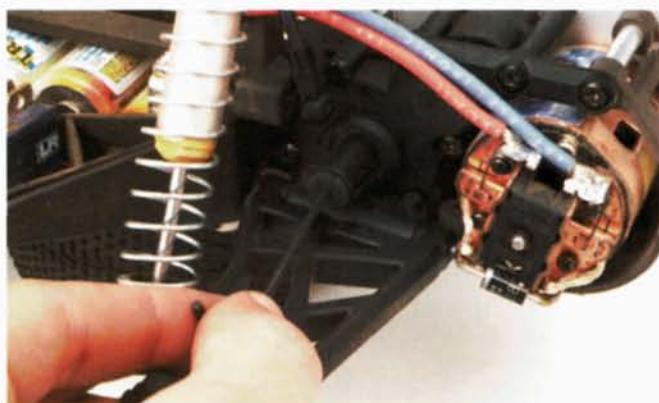
5 Eliminate hinge-pin slop

Some cars have hinge pins that extend past the suspension arms, leaving a gap between the E-clip and the arm. This allows the E-clip to flex back and snap off if it's struck. To prevent this, fill the gap by sliding an O-ring over the hinge pin before you reinstall the E-clip. If your car's arm mounts have sufficient bulk, you can get rid of E-clips altogether by using a setscrew to hold the hinge pin in place. With a drill bit of an appropriate size, make a small hole in the arm mount in line with the hinge-pin bore. Thread the setscrew into the hole, and tighten it until it holds the hinge pin in place. Don't use this tip unless there's plenty of material around the hinge-pin bore, or you'll weaken the arm mounts.



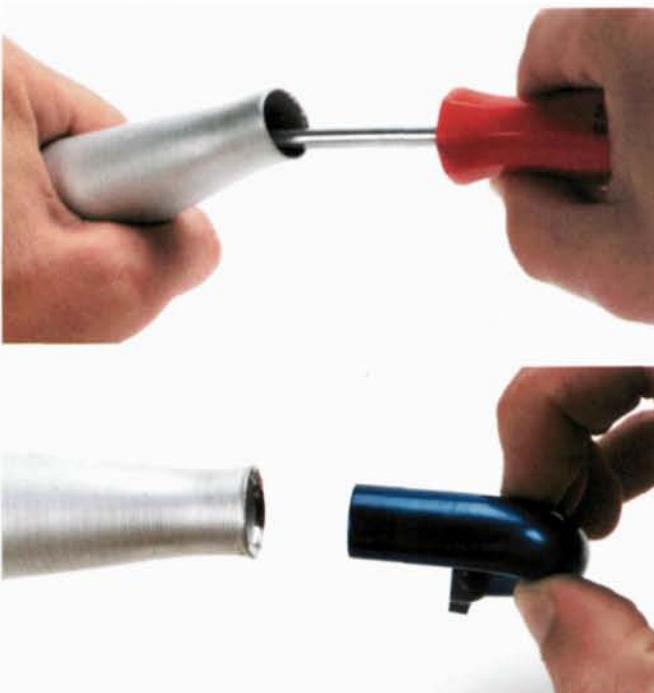
6 Keep the diff's thrust bearing dirt-free

The presence of dirt is a main cause of thrust-bearing failure. Most kits have some kind of cap to keep dirt away from the thrust bearing; use it. If your kit isn't so equipped, or if you've lost the cap, try placing a piece of foam in the outdrive, over the bearing. Cut the foam slightly oversize so friction will hold it in place (here's an easy way: use a pair of pliers to clamp a concave washer against a piece of foam tire insert or similar material; the washer will cut a perfect foam plug). Install the foam in the outdrive and check for dogbone clearance; the dogbone should not be deeply squishing the foam, but it's OK if it just touches it.



7 Heat-shrink CVDs

If you haven't lost a pin from a CVD yet, you're lucky. Despite the thread-lock that MIP* includes with the CVDs, even the most careful builders occasionally throw a pin. Prevention is simple: remove each axle and use some heat-shrink tubing (Du-Bro offers an assortment of sizes) around the axle's "bell" to capture the pin if it loosens. Just be careful not to allow excess tubing to hang over and rub the inner hub carrier.



8 Flare the exhaust header

No matter how many zip-ties you wrap around your exhaust coupler or how tightly you cinch them down, couplers seem to slide off during those long Mains. You can greatly reduce the chance of this happening by flaring the ends of the manifold and exhaust pipe. Just insert a screwdriver into the open end, apply pressure to the side of the opening and give it a spin. As the photos show, this creates a "lip" on the pipe. Now the manifold and pipe have a little more "bite" on the coupler, and with a pair of tight zip-ties, they should stay in place.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

Nitro necessities

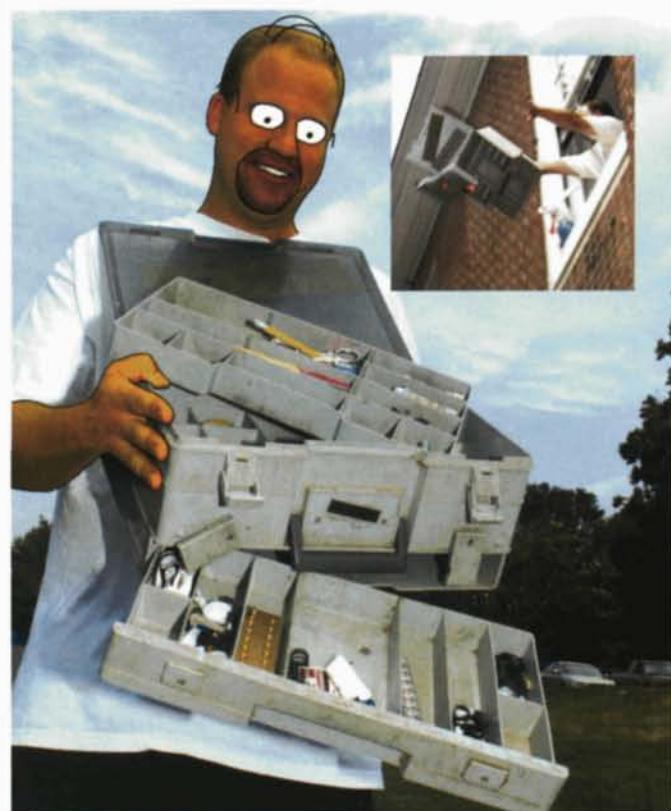


In addition to your already well-stocked—I hope—toolbox, this is the additional stuff you'll need for running nitro-powered cars.

I see guys at the track with toolboxes in all sizes and shapes. You can tell that some of them are really proud of their TV-set-size toolboxes from the way they swing those monsters up onto the pit table and then freely let them crash down onto the flimsy work surface. It's their way of saying, "I'm here, everybody—and watch

out, 'cuz I'm so serious about my racing!"

Well, let me tell you something, buster; I don't care if your race box is equipped with a mini-microwave oven (the emergency White Castle burger size) and a micro satellite dish for between-heat relaxation. If you don't have the special little tools that you



Here's Kevin "Homer" Hetmanski with his toolbox. He looks so happy because, at last, he has followed my advice. If you sit very close to him when he opens up his box in the pits, you can hear him muttering, "Mmmm ... tools." Inset: if your box is missing that desperately needed little tool on race day, this is what you're going to feel like doing with it.

desperately need during a crucial pit stop, your toolbox ain't worth spit, and you might as well throw it out the attic window. You'll experience more racing thrills watching it speed toward the ground than you will sitting out a heat at the track because you didn't have the important tools you needed to get—and *keep*—your nitro-powered car running.

I can still hear Homer's tongue-wagging scream when he realized

he didn't have a 1.5mm hex drive to adjust his brake linkage during a pit stop in a heat he would have otherwise won. That was last year, and he has never made that mistake again.

The following recommendations are nitro-specific and are, of course, in addition to the already well-stocked pit box that you routinely use for electric racing.



Fuel needs. This is easy: fueling bottle, prime bottle (if your car is not equipped with a self-priming device), and lots of new tubing. If I see bubbles in the fuel line, I replace it. Tubing can have microscopic tears in it, so bring extra, and don't forget the zip-ties for header/pipe coupling and other tie-down needs.



For leak repairs, Loctite's* Permatex Ultra Copper is a high-temperature RTV silicone that works great on our 2-stroke glow engines. It will even seal the exhaust port/header joint—the hottest spot on the engine. Of course, it will form a good gasket for any other part of the engine (except the cylinder head). Always keep medium-strength Loctite on hand for those screws that love to undo themselves and drive you crazy.

The first order of business is to get the engine running. For that, you need glow-plug gear; gear to light it up, and gear to check it and replace it, if necessary. Left to right: a freshly charged glow starter (I usually have at least two with me); an OFNA dry cell glow lighter for backup (don't forget the batteries); OFNA's Fast Charger for glow starters (it works off any 6-cell pack); Dynamite's* and Du-Bro's* long-reach glow-plug socket wrenches and, at the bottom, Warehouse Hobbies' Glow-Plug Caddy. Let me just say a few words about how to treat glow plugs: some of you treat your spare glow plugs very poorly. You allow them to slosh around on the bottom of your toolbox along with the spare nuts and bolts and oil-soaked track dirt. The glow element is a very fragile component that needs to be protected and kept clean. Do this with the cool little Glow Plug Caddy. Each plug has a viewing window in the bottom so its element can be tested and viewed without removing the plug from the caddy. Get one; several companies sell them, and they're cheap—plugs aren't!

HOT STUFF

AVM INTERCOOLER

This AVM (accelerated velocity manifold) Intercooler is from Conley Precision Engines*—you know, the company that brought us the fuel-pumping system I described a few issues ago. Anyway, according to Conley, this little manifold not only increases intake velocity but also improves the incoming fuel mix by making it denser (more concentrated). A dense mix boosts performance. Another collateral benefit is lower running

temperatures—always a good thing—and easier hot restarts.

This little bolt-on is computer-designed and CNC-machined of aircraft-grade aluminum. It's going to be available for all 2-cycle engines and carburetors for a retail price of \$24.95 and will be included with Conley's .12-, .15- and .21-size pump/carb systems. How well do they work? I'll let you know soon.



Good-quality metric hex-drivers are a must. Make sure that the set you buy includes 1, 1.5, 2 and 3mm sizes. There's a set to fit every budget. Left to right: Hudy*, Dynamite* and RPM* drivers. At the bottom is a small precision channel-lock wrench for procedures involved in the installation or removal of the flywheel, clutch bell, or clutch shoes. To prevent marring, put a rag between the wrench and the gripped surface. I do not use piston-stop devices because I feel they put internal engine parts at risk. Once again: don't even leave your house to go nitro racing if you don't have these tools. Stay home on Saturday, turn on "Mystery Science Theater 3000," and use your toolbox as a tray for your milk-and-cookies snack.



If you don't have a set of these, you might as well throw your toolbox in front of a passing freight train: mini screwdrivers with long shanks, both Phillips- and flat-head types. Make sure that one of your flat-heads is small enough to fit into your low-end carburetor-adjustment screw. "Homer" had to learn the hard way.

It's cleanup time! Clean the machine, my friends; you'll be glad you did. Here's what I use to clean the externals: disposable shop rags and denatured alcohol in a spray bottle. Not much cost there, especially considering what you're protecting. After you've run all the fuel out of your engine, don't be afraid to put at least five or six drops of after-run oil in both the glow-plug hole and the carburetor throat, then turn the engine over by hand a few times before you replace the plug and air filter.

NITRO KNOW-HOW

Chris,

Sorry to bother you, but I've been having some problems with my T-Maxx, and I hope that you can help me. The problem is hard to explain, but I'll try to describe it. The idle speed is too high, the fuel mixture is too rich (I'm supposed to turn the high-speed needle clockwise, right?), and when the "T" shifts into second gear, there is a major loss of speed and power, and the engine makes funny noises. Hard to explain; a video would be much easier. I am being so paranoid because my first nitro experience didn't go well at all, and I don't want to blow up my T-Maxx. Thanks a lot for your help.

Matt P.

Matt,

Don't worry; you won't ruin anything, as long as you don't run the engine too lean for any length of time.

Your problem might be related to an incorrectly adjusted low-end needle screw. Trying to compensate for this with the main needle would just frustrate you and make the engine do all sorts of strange and annoying things. I know the low-speed adjust is hard to get at, but you need to check it. A good basic starting place for the low screw is the point at which the top of the screw is flush with the throttle-barrel body, as shown in the photo. A really safe starting point for the main needle is two turns out from the screwed-in position. This may be a bit too rich, but you can always tune leaner from there. For more info, Traxxas* has an alert about the low-needle problem on its website; the address is www.t-maxx.com.

Also, in his "4x4" column in the June 2000 issue of *RC Car Action*, Kevin Hetmanski (aka "Homer") has a cool and simple mod for the T-Maxx carb that makes low-end needle access easier.

Have fun,

Chris



OK, I was a chooch. In the September edition of "Piston Power," I told you about this great product, Demon-Clean, for cleaning baked varnish off your engine, but I didn't tell you how to get it. Order it directly from Dave Gierke Models Inc., P.O. Box 83, Bowmansville, NY 14026; phone/fax (717) 681-4840.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

Rescue that old rig!

I occasionally get dragged to tag sales (hey, who doesn't love pre-owned polyester pants, musty stuffed animals and half-finished jigsaw puzzles?), and at a recent junkfest, I found this Associated* RC10GT for a paltry \$10. As you can see from the photo, it needed a lot of work. This month, I'll show you how I took my GT from the bone yard to the backyard and wound up with a high-performance, monster-sized ride that's fast, tough and a lot of fun.



TUB TIME

A black frosting of grease, fuel residue and grime made it hard to determine which type of vehicle I had bought, let alone see what needed fixing. So before I even got near my toolbox, I gave "Project Ten-Spot" a good bath. I used a brush and a bottle of Traxxas* Nitro Wash to scrub off the heavy stuff then blew away the remainder with a thor-

ough blasting from my compressor. Since I knew I would tear the truck down later, I wasn't worried about soaking any bearings, and besides, nothing I did could make the truck any worse.

GET BENT

With the crud removed, I could see that the nose brace tubes were bent like macaroni, which almost certainly meant that the chassis was also

Lookin' good, eh? I went a little nuts with my project, but the items that do the most to transform the truck (namely, the body, wheels, tires and a little fabric dye) aren't expensive.

tweaked. To check it, I placed the bare chassis on a countertop to see whether it would rock; it did. The chassis was twisted as well as bowed, and I decided it wasn't worth bending it back into shape. Instead, I replaced it with a new one.

I figured that whatever crash had caused such damage on the chassis must have also damaged other parts. I checked the suspension to see whether the hinge pins were still straight. With the shocks removed, I checked whether the suspension arms moved up and down freely (if an arm doesn't fall back under its own weight, there's a problem). Unsurprisingly, the GT held its arms up like Arnold Horshak, and I was certain that the

hinge pins were bent.

Sometimes, you can't tell just by looking at a hinge pin whether it is bent; if you think it might be, roll the pin along a flat surface to see if it wobbles. In my case, some were kinked so badly that I had to pound them out of the arms. I replaced all the hinge pins with fresh parts.

SUSPENSION STUFF

My truck didn't have any shocks when I purchased it; looking at

the front end, I could only imagine what had happened to them! I installed Associated's gold-anodized shocks. They're not as expensive as Teflon-coated shocks, and they work just fine. Since I was building the truck for the backyard, not the track, I filled the shocks with Associated 40WT silicone shock oil for extra damping.

As I disassembled the truck, I noticed that the rear suspension blocks had worn-out screw holes that caused the blocks to float on the chassis. I could have saved the blocks by installing larger screws, but instead, I replaced them with RPM* suspension blocks. The RPM parts are super strong, and I was afraid the original arm mounts might have been one jump away from breaking. When I installed the blocks, I added a dab of silicone to the screw threads to prevent them from backing out.

DRIVE-TRAIN MODS

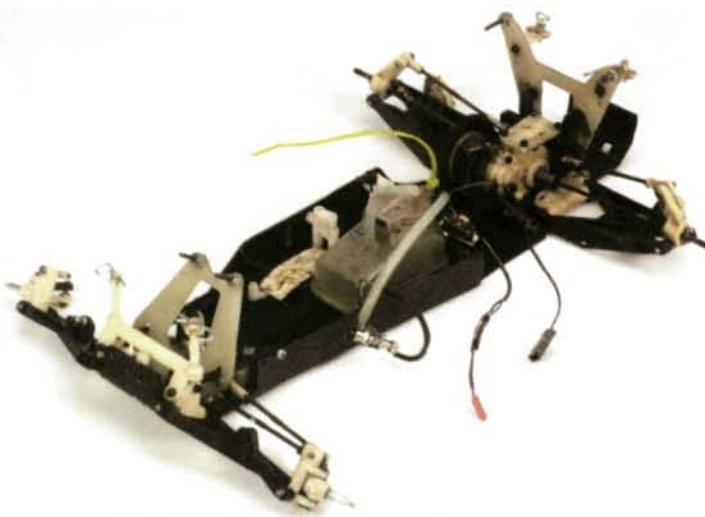
When I opened the transmission, I expected to find gears with about as many teeth as the banjo-playing kid from "Deliverance"; I was surprised to find them in good shape. All I had to do was to clean off the gears, clean and relube the bearings and reassemble the gearbox. While the gears were out, I disassembled the differential and gave it a complete rebuild with fresh rings and



The truck's front end took a hard hit; these nose tubes are supposed to be straight. The rest of the chassis looked OK at first glance, but the main tub was also bent.



The top hinge pin is slightly bent; I rolled it once or twice on a flat surface to check its straightness. I didn't need to roll the bottom pin to see whether it was bent!



This truck is an original RC10GT with many white parts. After a little cleaning and dyeing, the parts look new again.

PARTS LIST

Associated

Factory Team titanium turnbuckle/hinge-pin combo—part no. 1520, \$46.

Factory Team blue gas-truck tub chassis—7525B, \$40.

Factory Team blue nose plate—7305B, \$11.

Nose-brace tubes—7315, \$5.50.

Foam pad—7530, \$1.50.

Rulon clutch disc—6585, \$3.

Brake bracket—7551, \$2.50.

Brake shoe—7552, \$1.50.

Brake disc—7553, \$4.

Disc-brake cam—7555, \$3.

Brake cam clip—7556, \$1.50.

Throttle pivot—7557, \$2.

Throttle pivot clip—7558, \$1.50.

Brake/throttle linkage—7560, \$9.

Disc-brake adapter—7561, \$3.50.

Clutch nut—7603, \$8.50.

Ball bearing, $\frac{3}{16} \times \frac{7}{16}$ inch, flanged—6902, \$15.

Flywheel collet, with spacer shim—7618, \$3.

Shock set, standard; front, 1.02—6421; rear, 1.32—6420; each \$25.

Engine-mount adapter—7629, \$8.

Air-filter kit—7705, \$7.50.

MIP parts for RC10GT

4-N-1 clutch—3012, \$11.95.

Heavyweight flywheel—3019, \$12.

360 Stinger kit—3002, \$58.95.

CVD kit w/ $\frac{1}{4}$ -inch axle—1008, \$32.50.

Parma

F-250 Super Duty body—10173, \$21.95.

Pro-Line

Masher 2000 tires—1074, \$17.50.

Robinson Racing Products

RC10GT steel combo—2365, \$36.50.

RPM

RC10T steering enhancement kit—70191, \$8.95.

Carriers and $\frac{1}{4} \times \frac{1}{2}$ -inch bearings for RC10T and GT—70232, \$29.95.

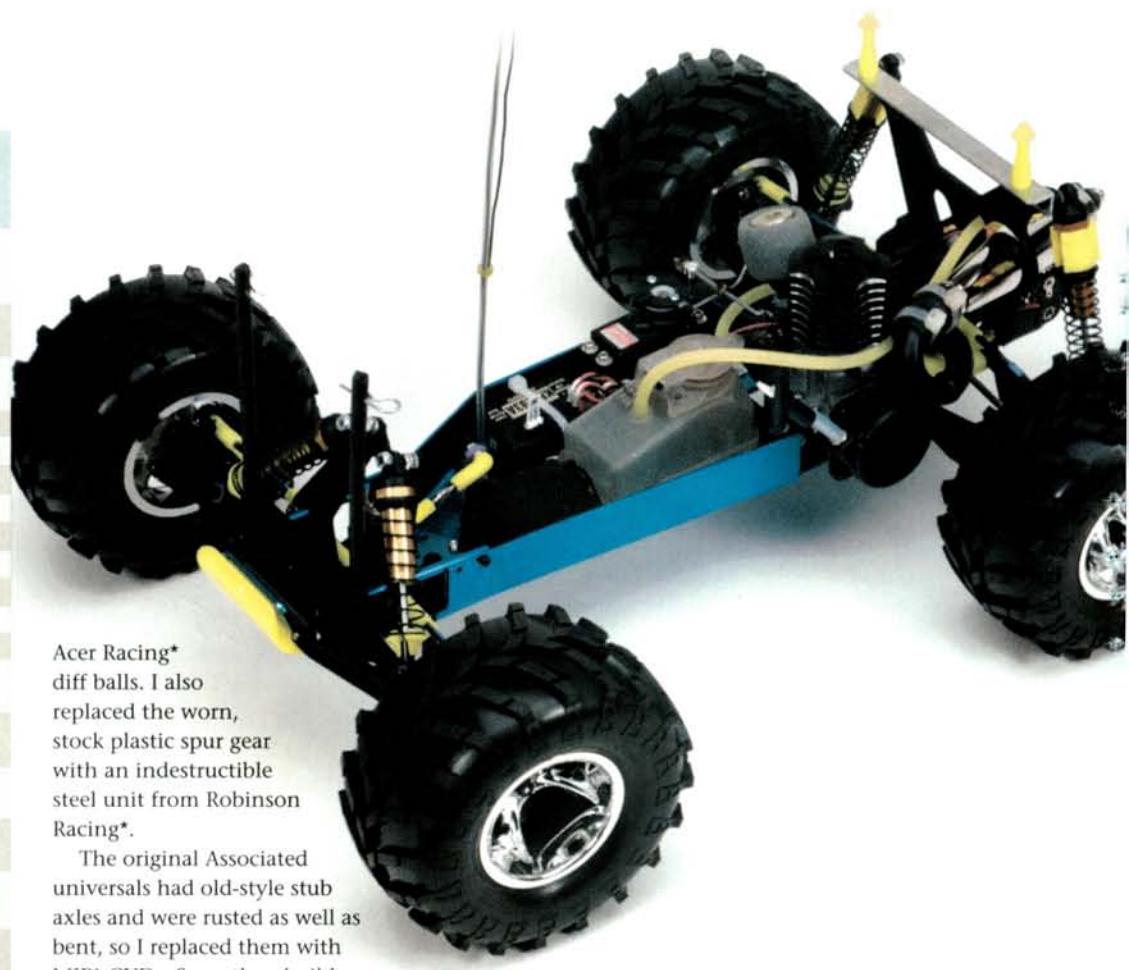
GT 3-degree rear mounts—70532, \$5.95.

10T, T2 and GT mini bumper/skid-plate—70722, \$3.95.

Clawz rims (F/R)—81533/81493, \$9.95.

Total cost (including original \$10 investment)

\$459.55



Acer Racing* diff balls. I also replaced the worn, stock plastic spur gear with an indestructible steel unit from Robinson Racing*.

The original Associated universals had old-style stub axles and were rusted as well as bent, so I replaced them with MIP* CVDs. Smooth, rebuildable, strong ... you know all about CVDs, right? While I was at it, I installed new rear hubs from RPM that are made of indestructible plastic and include larger ($\frac{3}{4} \times \frac{1}{2}$ inch instead of the old $\frac{5}{16} \times \frac{1}{2}$), more durable bearings. You can also get the RPM hubs without bearings.

EYE CANDY

Because this was an old-school GT, a lot of parts were molded in white plastic. These parts look great—until you hit the dirt. I rounded up all of the white plastic parts, gave them another Traxxas Nitro Wash bath, thoroughly rinsed them off in clean water, then dyed them black with RIT fabric dye (there's a great "how to" on this in the July '99 issue of *RC Car Action*). As you can see, the black dye made a huge difference in the parts' appearance.

ENGINE

My tag sale GT included an engine, or shall I say an "engine kit." The Zip-Loc bag

contained a burned piston, a bent connecting rod, a crankcase with rusted-in crank and a pull-starter (with uncoiled spring; thanks). I thought about rebuilding the relic for about, oh, a second, then bolted in a Megatech* M16 instead. The M16 is a good buy; it's reliable and has respectable pulling power. I also installed an MIP 4-N-1 clutch on an MIP heavyweight

flywheel. Since I plan to make my GT into a monster with taller tires, I geared it down some with an Associated 18T clutch bell.

RUBBER

Gotta go with the Pro-Line* Masher 2000 tires. Not only are these tires huge, but their aggressive tread pattern also digs in on just about any surface. And it doesn't hurt that



Pro-Line Masher 2000 tires give my GT that monster stance I was looking for. The tires are mounted on stylish RPM Clawz rims.

they look totally sinister, especially when wrapped around RPM chrome Clawz.

FINISHING TOUCHES

I completed the GT with my KO Propo* EX5 Master AM radio, and I stuck with the standard servos it includes. For racing, I would want a faster,

SHOP TALK

I like to jump my nitro Stampede. After one particular jump, my truck stopped moving even though the engine was running and spinning all the gears. I looked at the drive train; the drive shafts are fine, and everything inside the gearbox seems to be OK. I know it is not my slipper clutch because I tightened it so I could get more acceleration. What could be the problem?

Bob Gay
Newport, RI

It sounds to me as if you have a loose or broken drive yoke (the part that connects the telescoping drive shaft to the differential). Everything may look OK, but the diff is just spinning away inside the broken or loose yoke without moving anything. Check the yokes, and tighten them if you can. If one or both have had it, consider replacing them with Traxxas steel yokes (part no. 4628x, \$19.50). These are very tough and will handle whatever you can dish out. Oh, and by the way: you should loosen your slipper clutch at least enough so it slips for a moment on a high-traction surface when you launch at full throttle. You'll still be able to throw big roosts in the dirt, but you'll spare your tranny from big jolts that may strip gears—or break drive yokes.

If you have any problems or questions about trucks, or if there is something you would like to see in "4x4," email me at kevinh@airage.com or send your letters to:
"4x4"
RC Car Action
100 East Ridge
Ridgefield, CT 06877-4606 USA

stronger steering servo, but the standard servos are just fine for hockin' around.

When I picked up the previously mentioned RPM parts I needed, I also bought some RPM stuff I just wanted. I added heavy-duty ball cups, spring perches, preload collars and body mounts.

To turn the chassis into a truck, I topped off my reborn GT with a Parma* Super Duty body. I painted the body with Parma FasKolor paints and extended the RPM front-body mount with Parma body posts. The rear mounts are attached to a piece of aluminum angle that I bolted to the rear shock tower to get the high-riding look I was after.

AND THE TALLY IS ...

When I added up the prices of



A Megatech M16 engine now powers my reworked GT. The power of the larger engine makes up for the weight and size of the Masher tires.

all the parts used on my truck, I found that this project cost just over \$450. Sure, I could have bought a new GT for much less money, but I was looking for a challenge. It is

cool to take a piece of junk and turn it into something that will make someone say "Wow." Of course, you could go less nuts and restore for much less money.

If you see a potential RC salvage mission at a tag sale, take it home; you could have a fun project for pocket change; but if you see a pair of polyester pants, leave them behind.



The MIP Stinger pipe exits through the shock tower, which leaves the left side of the chassis open for better ground clearance. The rear body mount is a simple piece of 1/2-inch aluminum angle that has been cut to length and attached to the shock tower. RPM body posts finish it off.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■



Thunder Tech adjustable motor mount

Some Tamiya vehicles have handy preset gear mesh, which isn't so handy when the gear you need isn't one of Tamiya's factory-set possibilities. Thunder Tech* solved this problem with its adjustable motor mount; the kit includes everything required to make gear mesh fully adjustable. Kits are made to fit The Tamiya Clod Buster, Wild Dagger, Frog and Blackfoot, and there is also a universal mount for other vehicles that have motors in fixed positions.



Hudy Advanced Comm Lathe

With the advent of rebuildable stock motors and the growing popularity of super-low-wind modifieds, commutator lathes are becoming hot commodities for all racers, not just for the elite. In addition to its automated Executive Automatic lathe (reviewed in October's "Product Probe"), Hudy offers the affordable, manually operated Advanced lathe for motor-tuning freaks and weekend warriors. Check it out.

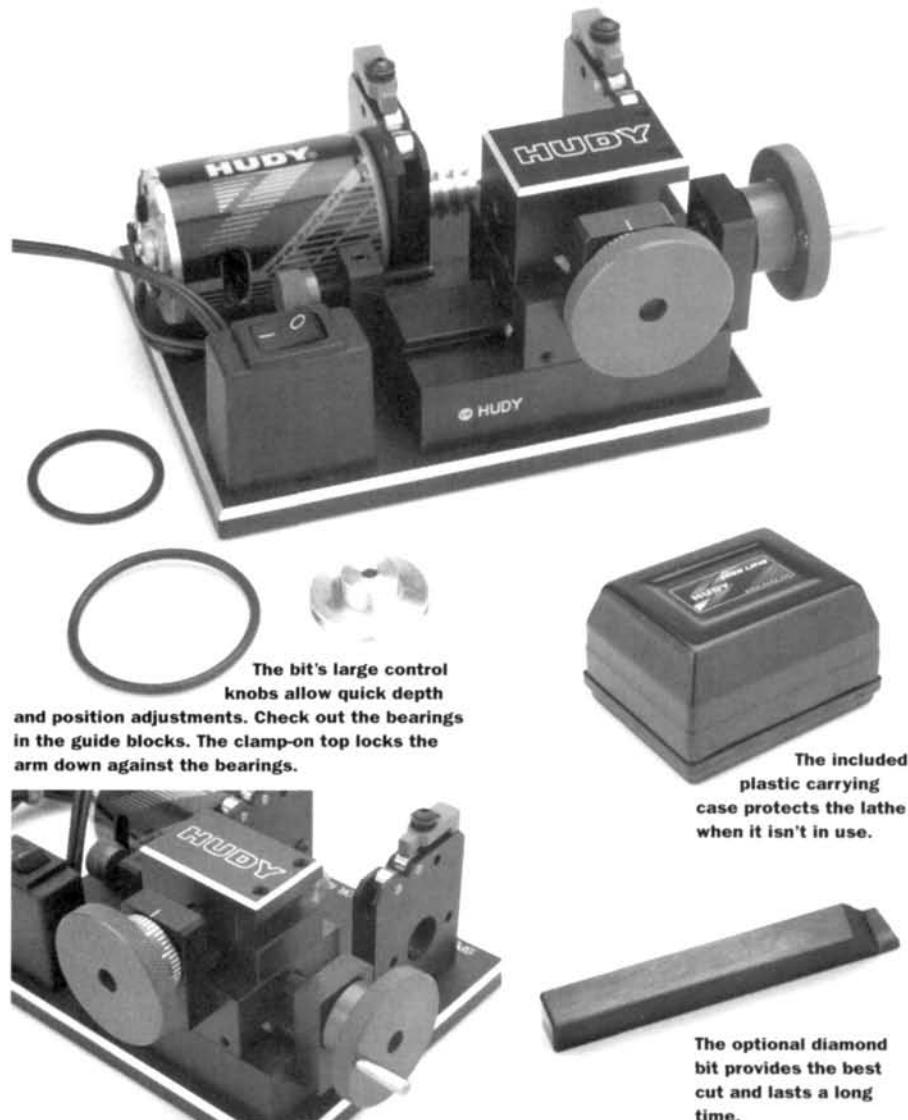
CONSTRUCTION

The Advanced lathe is machined from aluminum and hard-anodized. That means it will last a long time, and each cut will have the precision of the first. Large cap-head screws secure each piece to the base. The guides are mounted in slotted holes that allow the lathe to accommodate RC motor armatures as well as slot-car motor arms. The lathe's cross slide and bit holder slide on Teflon inserts whose tension can be adjusted with a setscrew. The more tension applied by the screws, the more resistance. The bit can be shimmed by brass inserts that adjust the cutting height for comms of different sizes.

FEATURES

- **Ball-bearing guides.** Hudy's unique, patented bearing guides use a pair of ball bearings to support the armature, and a plastic finger holds the armature securely against the bearings to prevent bounce or chatter. The bearing-supported design eliminates the need for constant lubrication and minimizes friction. The only potential problem I could see is that a piece of copper might work its way between the bearings and the armature, and that could cause the arm to jump. I never experienced this, but it's worth keeping tabs on while you cut.

- **Adjustable backstop.** When properly adjusted,



the backstop prevents the cutting bit from running past the comm into the windings (which spells disaster for both). The Advanced lathe's backstop is easy to reach and has a knurled knob for tool-free adjustment. Hudy's attention to detail is evident here; a setscrew is provided

to adjust the tension on the backstop screw, so vibration from use won't change the backstop setting.

- **On/off switch.** The Advanced's securely mounted, clearly labeled switch makes the

RC Neon

Gas Car Light

One of the most impressive features in last month's Project Maxx Velocity (page 100) was the lighting setup on the street version. Now RC Neon's car lighting system



features head-, tail- and brake lights and your choice of yellow or blue fog lamps. The lights are bright enough to run at night and are visible in daylight. A prewired momentary switch is included to activate the brake lights. Part no.—Kit 6. Price—\$39.95.

Team Orion

Tire Products

Team Orion's odor-free tire products come in a non-aerosol pump that accurately dispenses cleaner and traction compounds right onto your tire without having to deal with swabs. Wipe off the compound 10 minutes before race time, and you'll be set to race. Part nos.—44100 (TC Traction Formula No. 2), 44101 (TC Traction Formula No. 1), 44103 (Touring Tire Cleaner), 44105 (Foam Traction Formula). Price—\$7.99.



lathe safer and more convenient to use than a direct-to-battery "always on" setup. The switch includes wired alligator clips on 32-inch leads that give you plenty of room to move the required 4-cell battery pack (not included) to a convenient location.

• **Included slave motor.** At last, you can put that wheezy stock motor from the '87 Regionals to rest; Hudy includes an installed, sealed-endbell stocker to spool up the armature.

• **Slot-car adaptable.** If any of you guys are also into slot cars, then the included large-diameter motor pulley will get your slot armature up to speed for a smooth cut. The standard RC motor pulley has three sets of grooves for the O-ring drive belt, so you should have no trouble positioning the belt on the armature.

• **Protective case.** The lathe is enclosed in a sturdy, two-piece plastic case that is easily stowed in a pit bag without fear of nicking the cutting bit or spreading comm shavings all over your gear.

• **Accessories.** The Hudy Advanced lathe comes with all tools required for setup. A set of included hex-wrenches adjusts bit height and removes guides. Brass shims are used to adjust the bit height for the perfect cut. The only important item not included is a bit; Hudy recommends its diamond bit (part no. 10 1081) but also offers a less expensive carbide bit (10 1080).

OPERATION

The Hudy Advanced comes ready to cut right out of the box—a nice feature. All you have to do is pop in an armature and set the backstop so that the cutting bit stops before it hits the armature windings, snap the retaining arms over the armature shaft and attach the alligator clips to a charged 4-cell pack.

To make it easier to see where I was cutting and lubing the comm, I passed a permanent ink marker over it as it spun. A crisp copper line appeared when the bit touched the comm, and I made my first pass. The cross-slide operates very smoothly, and I found it easy to keep a constant pace as the bit made its way across the copper. I could still see some low spots on the comm after my first shallow cut,

so I dialed in another turn on the bit and made another pass. After two passes, the comm was brightly finished and perfectly true.

Likes

- Factory-wired on/off switch.
- Handy case.
- Precise adjustments.

Dislikes

- Cutting bit is not included.

THE VERDICT

The Hudy Advanced lathe is a racer's dream. It's simple to use, and the optional diamond bit makes a smooth, even cut. The adjustable guides accommodate a variety of armature sizes. The ball-bearing guides provide a smooth ride for the arm. If you're in the market for a comm lathe that is built well and produces an excellent cut, then check out the Hudy Advanced comm lathe.

Part no.—10 100.

Price—\$189.99 (without bit).

Diamond-cutting tool—10 1081, \$99.99.

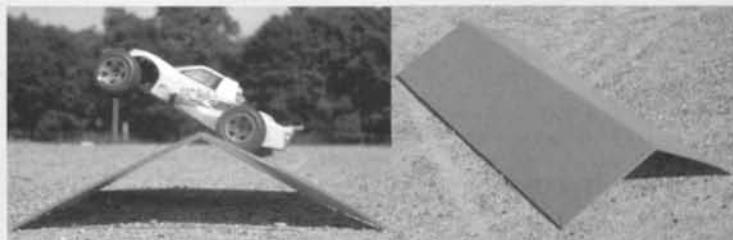
—Derek Buono

KO Propo Fail Safe Adapter FSA-1

Check out KO's new FSA-1. The unit measures 1.5x.75x.25 inches and weighs only 1/4 ounce. The main fail-safe mode lowers your throttle and applies the brake in the event of a radio signal loss. If the receiver voltage falls below 4 volts, the FSA-1 battery fail-safe mode applies the brake for approximately 2 seconds to indicate a problem that needs your attention. We installed the unit in an RC10GT, and it worked as promised.

Part no.—FSA-1.

Price—\$37.95.



DuraTrax Kwik Ramp

Running your off-road stuff at home is fun for a while, but eventually, you'll start looking for some jumps. Before you carve a berm in the front lawn, pick up the DuraTrax Kwik Ramp. Unfold the 24x48-inch corrugated plastic ramp and install the two wire braces; you're set for some hang time. The ramp is sturdy, fully adjustable and folds flat for easy transportation. We thought it would tend to get pushed around, but it stayed put launch after launch.

Part no.—DTXC2375.

Price—\$14.99.

Racers Edge Channel Locknut Drivers

The rugged 7-piece Channel Locknut drivers from Racers Edge range in size from $\frac{3}{16}$ to $\frac{1}{2}$ inch diameter. We like the tools' large, comfortable handles and the hollow, hardened steel shafts; the tools have a limited lifetime warranty.

Part no.—RE2490.

Price—\$24.99.



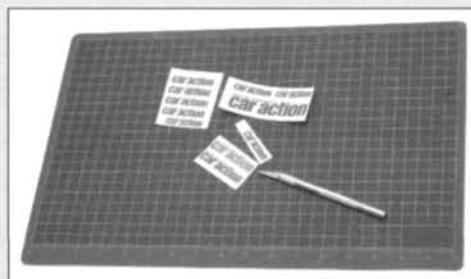
Excel Hobby Corp. Self-Healing Cutting Mat

When it comes to cutting decals, trimming the flashing off plastic, or any other tasks that require you to use a hobby blade, it's nice to have a clean, flat surface to work on. Excel's self-healing mat, available in many sizes, is an ideal complement to your bench top. The green surface remains flat and gouge-free, even if you cut it intentionally. Any score marks in the hard, dense material appear to flow back together within just a few minutes and become

virtually undetectable. The surface is printed with a $\frac{1}{2}$ -inch-square grid pattern that is helpful in aligning material, and the ruled lower portion helps to keep cuts the correct length.

Part no.—60003.

Prices—\$10.65 (8x12 in.), \$17.99 (12x18 in.).



Calandra Racing Concepts

1999 ROAR Nats A-main - Top 3!
1/10th and 1/8th Podium Finishes

Texas Biggie!
Winner + T.Q.



MOUNTED ON-ROAD GAS TIRES

FOR NEO AND SERPENT - EXOTIC RUBBER

- ◆ 1/10th Fronts - \$14.59 Rears \$17.00 ◆
- ◆ 1/8th Fronts - \$18.60 Rears \$22.60 ◆

Extra 5% off for 5 pack orders

CRC CARPET KNIFE \$3.1 AND 6-PACK IN STOCK!

Dealer and distributor inquiries welcome.
Order Direct - We sell at "street prices" and
accept major credit cards! But, try your dealer first!



Coming soon..NEO Touring cars and parts!

1/10 2wd Attack MX-2 - \$299.99
1/10 4wd Attack MX-4 - \$334.99
1/8 4wd Saber RX-4 - \$374.99

Associated TC3 Delrin + Aluminum Parts

3016 - Alum Battery Hold Down Bar
3019 - Alum Front "C" hubs
3021 - Alum Steering Blocks
3022 - Alum Rear Uprights
3030 - Light Delrin Diff Outdrives
3038 - Alum Clamp Motor Heatsink
3055 - Alum Front A-arms
3056 - Alum Rear A-arms

Team CRC is dist. by - Horizon + ERI

227 Lower West Dominick St.
Rome, NY 13440 - www.teamcrc.com
Tel+Fax 315-338-0867

SCHUMACHER BIG 6 LOTUS

Continued from page 97

of the full-scale Elise (and will most likely attract the same amount of attention—especially in "look-at-me" yellow). Although no match for a fuel-powered 1/5- or 1/4-scale car (in terms of both performance and complexity), the Big 6 chassis offers all the thrills associated with driving an exceedingly large RC car, and if that is the main attraction for you, you will not be disappointed. And if it's a full-size Elise you lust after, Schumacher's very big, mucho fun version will satisfy your exotic-automobile fantasies while you wait for that winning lottery ticket.

*Addresses are listed alphabetically in "Featured Manufacturers" on page 248. ■

TOYZ FOR BIG BOYZ & GIRLZ

THE HOBBY STORE

WORLD CLASS SERVICE
FOR ALL YOUR R/C NEEDS!!

FREE !!

1 QUART 20% FUEL
WITH PURCHASE OF
ANY CAR KIT

STORE SPECIAL
NITRO OB4 ONLY!!
\$249.99

VISIT OUR WEBSITE
WWW.THEHOBBYSTORE.COM

SERPENT OFNA TRAXXAS
HPI DURATRAX GS RACING
GPM FACTORY WORKS
AND MANY MORE!!

WE ALSO CARRY
PLANES TRAINS HELICOPTERS
BOATS TRACTORS MODELS
PHONE ORDERS CALL

TOLL FREE
1-877-462-2439

ALL OTHER CALLS
(914) 668-3022

119 MT. VERNON AVE.
MT. VERNON, N.Y. 10550



In order to serve you better,
SavOn has Gone Electronic!
see our huge webpage at
<http://www.savonhobbies.com>



Mail or Phone Orders to:

SAVON HOBBIES

P.O. BOX 42120

Miami, FL 33242-1220

phone (305) 634-8959, fax (305) 634-3950

e-mail MiamiRC@aol.com

hours: Monday through Friday, 9am - 6pm, EST

Add \$6.00 per order for Ground UPS or Parcel Post shipments within the continental USA. Next Day, Second Day or EMS shipments available at additional charge. Foreign customers call or FAX for a quotation. We accept Visa, MasterCard, American Express, and Discover cards. No COD shipments.

Florida residents add 6.5% sales tax. SavOn is not responsible for typographical errors. Warranties & guarantees handled directly by manufacturer.

R/C BBS: <http://www.rc-racing.com>

visit **ORANGE BLOSSOM HOBBIES** at 1975 N.W. 36 St., Miami, FL 33142

One of the nation's largest hobby stores, serving the modeling public since 1949

R/C Car Dept. phone: (305) 633-8114, <http://www.orangeblossom.com> hours: Mon-Sat 9am - 6pm

La nueva diversión del Alto M



Mail ordering available.

We speak Spanish and English.

We accept all major credit cards.
All warranties are handled through the manufacturer.



Cars • Planes • Helicopters • Boats • Parts and supplies.

212-568-3667
67-81 New York, NY
10032

E-mail: actionhobby@aol.com

HOBBIES ARE US
Queens Largest Hobby Shop
Big Selection Low Prices
Special of the month

\$5.00 Off Any Purchase
over \$20.00 with this Ad
(Limit 1 per Customer)

Hobbies Are Us is located In Nagengast Hardware
68-02 Fresh Pond Road Ridgewood NY 11385
1-718-821-0958 WEB/EMAIL Hobbiesareus.com
1 Block from M Train

Niftech
NEW! The Ultimate Motor Spray

Highest pressure, fastest drying. Available for off-road and on-road. Safe on plastics. 20oz.

#4500 \$5.95 Highest Quality

Niftech Space-Age Lubricants

Micro Oil For ball bearing wheels,

renews old bearings. #1030 \$4.95

Motor Bushing Oil A super-

synthetic. Incredible! Increases RPM's

#4505BU \$4.95 Retail

Motor Bearing Oil Highest quality

possible. More RPM's #4505BE \$4.95

Diff Lube #2002DL \$4.95 Retail

Ultra Micro comm cutting fluid #4522 \$5.95

Hyper Drops Ultimate in brush lubrication. World

proven power, efficiency & RPM's #4510 \$7.95 Retail

SEND \$5.00 FOR COMPLETE CATALOG &
DECALS OR FREE WITH YOUR FIRST ORDER

SEND CHECK OR MONEY ORDER (PLUS \$5.00 SHIPPING & HANDLING)

www.NIFTECH.com e-mail NIFTECH@Juno.com

5565 WILSON DR. • MENTOR, OH 44060 • (440)257-6018
FAX (440)257-4281 • RETAIL & DEALERS WELCOMED

HPI Nitro RS4 MT RTR

by Bob Hastings

HPI recently added the Nitro RS4 MT truck to its nitro ready-to-run lineup. The Nitro RS4 MT broke ground (pun intended) for HPI a year ago as its first nitro off-road effort. Although it began as a clean-sheet design, the truck was engineered with many proven elements. Power is delivered by the familiar .15FE engine, but in this application, there's a plastic tuned exhaust instead of the more restrictive canister-style muffler. Unlike its electric namesake, the Nitro MT has a shaft-drive power train—a mainstay of $\frac{1}{8}$ -scale gas buggies. Shaft drive eliminates the possibility of damage-prone belts being mangled by rocks and pebbles. An outer cover on the spur gear further shields the driveline from debris. The fully countersunk, purple-anodized aluminum chassis features a removable radio tray for faster clean-up after a day in the slop.

It takes about an hour to ready the truck for running; the body posts, batteries and tire mounting are the only tasks left for you to take care of. HPI also includes a video that's full of helpful info for new nitro enthusiasts. The clear polycarbonate body comes with window masks and a protective overspray film. If you're after that "just-like-the-picture-on-the-box" look, the kit also contains good-quality vinyl graphics. I painted my truck using Parma's* Faskolor silver and black paints.

PERFORMANCE

The MT RTR is the real deal; it's as if you paid the hobby shop to put it together and install the radio for you. Tuning the .15FE is simplified by its single-needle carb, but its transition to full throttle could be smoother if the low-end needle were adjustable.

Overall, the engine has satisfying power, and hop-ups are available for those in search of added speed. The truck's 4WD system provides



good control and makes the MT feel equally at home in the loose stuff, on hard-pack and on uneven terrain. The oil-filled coil-overs soak up all but the largest craters, and the Pro-Line* Dirt Hawgs provide good bite. If instant fun is what you're after, the Nitro RS4 MT offers stadium-style performance in a ready-to-run 4WD monster package.



LENGTH 17 in. (430mm)
WHEELBASE 11.8 in. (300mm)
WIDTH 12.5 in. (320mm)
WEIGHT 4.57 lb. (2,072.9g)

FEATURES

- Shaft-drive power train.
- 2-channel radio with dual-rate steering.
- Countersunk, purple-anodized aluminum chassis.
- HPI Nitro Star .15FE engine.
- Pro-Line Dirt Hawgs tires.



REQUIRED ACCESSORIES

- 12 AA batteries.
- Polycarbonate-compatible paint.
- Tire glue.
- Fuel.
- Glow igniter.

ADVERTISER INDEX

AAA Model Supply/Dillon Racing, 238
 Ace Hardware Hobbies, 220-221
 Ace Hobby Dist., 89
 Action Hobbies, 244
 Airtronics, 150
 America's Hobby Ctr., 232-233
 Associated Electrics, 40-41, 67, 93, 113, 155
 B&T Racing Team, 210
 Bolink R/C Cars, 240-241
 BRP, 202
 Bruckner Hobbies, 172-177
 Calandra Racing, 244
 California R/C Ctr., 184-185
 CEN/Genka Trading Co., 58-59
 Competition Electronics, 124
 Dahm's Racing Bodies, 76
 Deans, 178
 Debbie's R/C World, 236
 DuraTrex, 37, 39, 83, 112, 201
 eHobbies, 188-193
 ERI Associates, 202
 FMA Direct, 238
 Futaba Corp. of America, 205, 210, 245
 G.T.P. California, 92
 Global Hobbies, 151
 GS Racing, 68-69, 125, 199
 HG, 50-51
 Hitec/RCD, 35, 110, 186
 Hobby Etc., 225
 Hobby People, 212-217
 Hobby Products Int'l., 16-17, 78-79
 Hobby Tech, 198
 Hobbytown USA, 66
 Horizon Hobby Dist., 20-21, 25
 Traxxas, 134-141
 Trinity, 3, 4, 5, 10-11, 12-13, 30, 32-33, 171, 249, 254
 Ultimate Hobbies, 223
 Yokomo USA, 101, 123
 Zip Clothes, 210

RADIO CONTROL CAR ACTION (ISSN 0886-1609, USPS 001-087, IPM 1534580) is published monthly by Air Age Inc., 100 East Ridge, Ridgefield, CT 06877-4606, USA. Copyright 2000, all rights reserved. The contents of this publication may not be reproduced in whole or part without the consent of the copyright owner. Periodical postage permit paid at Ridgefield, CT, and additional mailing offices.

SUBSCRIPTIONS. U.S. and Canada, call (800) 877-5169; fax (815) 734-1223, or set your Web browser to <http://www.rcstore.com/subscribe.html>. U.S. \$34.95 (1 year), \$55.95 (2 years); Canada, \$49.95 (1 year), \$87.95 (2 years). Canadian prices include GST, reg. no. 13075 4872 RT. **Elsewhere**, call (815) 734-1116; fax (815) 734-1223; \$54.95 (1 year), \$95.95 (2 years). All foreign orders must be prepaid in U.S. funds; Visa, MC, Discover and AmEx accepted.

EDITORIAL. Send correspondence to Editors, *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. We welcome all editorial submissions, but assume no responsibility for the loss or damage of unsolicited material. To authors, photographers and people featured in this magazine: all materials published in *Radio Control Car Action* become the exclusive property of Air Age Inc., unless prior arrangement is made in writing with the Publisher.

ADVERTISING. Send advertising materials to Advertising Department, *Radio Control Car Action*, Air Age Inc., 100 East Ridge, Ridgefield, CT 06877-4606 USA; phone (203) 431-9000; fax (203) 431-3000.

CHANGE OF ADDRESS. To make sure you don't miss any issues, send your new address to *Radio Control Car Action*, P.O. Box 427, Mount Morris, IL 61054-9853, six weeks before you move. Please include the address label from a recent issue, or print the information exactly as shown on the label. The Post Office will not forward copies unless you provide extra postage.

POSTMASTER. Please send Form 3579 to *Radio Control Car Action*, P.O. Box 427, Mount Morris, IL 61054.

FEATURED MANUFACTURERS

The following manufacturers' products are featured in this issue.

Ace RC
 Distributed by Ace Hobby Distributors.
Ace Hobby Distributors Inc.
 116 W. 19th St., Higginsville, MO
 64037-0472; (660) 584-7121;
 fax (660) 584-7766;
www.acehobby.com.
Acer Racing
 P.O. Box 5680, Santa Monica, CA
 90409-5680; (310) 472-8090;
 fax (310) 472-4870;
www.acerracing.com.
Airtronics
 1185 Stanford Ct., Anaheim, CA 92805;
 (714) 978-1895; fax (714) 978-1540;
www.airtronics.net.
Apex
 Distributed by Magma Int'l., 18 Crown
 Steel Dr., Unit 107, Markham, Ontario,
 Canada L3R 9X8; (905) 975-9753;
 (905) 975-9755.
Associated Electrics
 3585 Cadillac Ave., Costa Mesa, CA
 92626-1403; (714) 850-9342;
 fax (714) 850-1744; www.c10.com;
www.teamassociated.com.
California R/C Center
 1230 N. Kraemer Blvd., Anaheim, CA
 92806; (800) 687-0660 or
 (714) 630-9300; fax (714) 630-9307.
Conley Precision Engines Inc.
 825 Duane St., Glen Ellyn, IL 60137;
 (630) 858-3160.
Deans
 See W.S. Deans Co.
Du-Bro Products
 480 Bonner Rd., P.O. Box 815,
 Wauconda, IL 60084; (800) 848-9411;
 fax (847) 526-1604.
DuraTrax
 Distributed by Great Planes.
Dynamite
 4105 Fieldstone Rd., Champaign, IL
 61821; (217) 355-9511; fax (217)
 352-0355; www.horizonhobby.com.
Excel Hobby Corp.
 481 Getty Ave., Paterson, NJ 07503;
 (800) 228-4344; fax (973) 278-4343;
excelto22@foxinter.net.
FMA Direct
 9607 Dr. Perry Rd. #109, Ijamsville, MD
 21754; (800) 343-2934; fax (301)
 831-8987; www.fmadirect.com.
Futura
 Distributed exclusively by Great
 Planes; www.futaba-rc.com.
Global Hobby Distributors
 18480 Bandiller Cir., Fountain Valley, CA
 92728; (714) 964-0827;
 fax (714) 962-6452.
Great Planes Model Distributors
 2904 Research Rd., P.O. Box 9021,
 Champaign, IL 61826-9021;
 (800) 682-8948; fax (217) 398-0008.
GS Racing
 650 W. Duarre Rd., Ste. 205, Arcadia,
 CA 91007; (216) 445-6036; fax (216)
 445-6084; www.gsweb.com.tw;
gsusa82@aol.com.
Hitec RCD Inc.
 12115 Paine St., Poway, CA 92064;
 (858) 748-6948; fax (858) 748-1767;
www.hitecrcd.com.
Hobbico/Great Planes
 See Great Planes Model Distributors.
Holeshot Racing Products
 P.O. Box 630, Canton, MA 02021;
 (508) 587-0663.
HPI Racing
 15321 Barranca Pky., Irvine, CA 92618;
 (949) 753-1099; fax (949) 753-1098;
www.hpiracing.com.
Hudy Special Projects
 team@hudy.net
 Distributed by Serpent Inc. USA;
 (305) 639-9665; fax (305) 639-9658;
info@serpent-usa.com.
Integy/Matrix Technology
 1140 Centre Dr. #E, City of Industry, CA
 91789; (909) 627-2713;
 fax (909) 627-4132.
KO Prop USA Inc.
 16012 South Western Ave.,
 Ste. 308, Gardena, CA 90247;
 (310) 532-9355; fax (310) 532-9354;
info@kopropo.com;
www.kopropo.co.uk.
Kyosho/Great Planes Model Distributors
 P.O. Box 9021, Champaign, IL 61826-9021; (800) 682-8948.
Locite Corp.
 18731 Cranwood Ct., Cleveland, OH
 44128; (216) 475-3600;
 customer service (800) 338-9000.
Losi
 See Team Losi.
LRP
 Distributed by Associated Electrics.
Lunsford Racing
 2500 Three Lakes Rd., Ste. A, Albany,
 OR 97372; (541) 928-0587; fax (541)
 967-5917; www.lunsfordracing.com.
Megatech
 8300 Tonelle Ave., North Bergen, NJ
 07047; (201) 662-2800;
www.megatechrc.com;
info@ahcmegatech.com.
MIP
 830 W. Golden Grove Way, Covina, CA
 91722; (626) 339-9007; fax (626)
 966-2901; www.miponline.com.
Model Rectifier Corp.
 80 Newfield Ave., Edison,
 NJ 08818-6312; (732) 225-6360;
 fax (732) 225-0091;
www.modelrec.com.
MRC
 See Model Rectifier Corp.
Mugen Seiki
 20914 Bake Pky., Ste. 106, Lake Forest,
 CA 92630; (949) 707-5607;
 fax (949) 707-5614.
Novak Electronics Inc.
 18910 Teller Ave., Irvine, CA 92612;
 (949) 833-8873; fax (949) 833-1631;
www.teamnovak.com.
O'Donnell Racing
 10702 Hathaway Dr., # 2, Santa Fe
 Springs, CA 90670; (562) 944-9671;
 fax (562) 944-8821.
OFNA Racing
 22692 Granite Way, Ste. B, Laguna
 Hills, CA 92653; (949) 586-2910;
 fax (949) 586-8812; www.ofna.com.
Orion
 See Team Orion.
O.S. Engines
 Distributed by Great Planes.
Pactra Inc.
 Distributed by Testor Corp., 620
 Buckbee St., Rockford, IL 61104;
 (815) 962-6654; fax (815) 962-7401.
Parma/PSE
 13927 Progress Pky., North Royalton,
 OH 44133; (440) 237-8650;
 fax (440) 237-6333.
Picco
 Distributed by Trinity Products Inc.
Powers
 Distributed by Schumacher USA.
Pro-Line/Jaco
 P.O. Box 456, Beaumont, CA 92223;
 (909) 849-9781; fax (909) 849-2968.
Pro-Max
 Distributed by Global Hobby Distributors.
Protoform Inc.
 Distributed by Pro-Line.
Racers Edge
 5415 South, Kearns, UT 84118;
 (800) 622-7223.
RC Neon
 Distributed by Varad, 17902
 Star of India Ln., Carson, CA 90746;
 (310) 353-2612; fax (310) 768-3220.
Robinson Racing Products
 4968 Meadow View Dr., Mariposa, CA
 95338; (209) 966-2465; fax (209)
 966-5937; www.robinsonracing.com.
RPM Inc.
 14978 Sierra Bonita Ln., Chino, CA
 91710; (909) 393-0366;
 fax (909) 393-0465.
Sanyo
 2055 Sanyo Ave., San Diego, CA
 92173; (619) 661-6620;
 fax (619) 661-6743.
Savon Hobbies
 P.O. Box 421220, Miami, FL 33242-
 1220; (305) 634-8959; fax (305) 634-
 3950; www.savonhobbies.com.
Schumacher USA
 6302 Benjamin Rd., Ste. 404,
 Tampa, FL 33634; (813) 889-6961;
 fax (813) 889-9593;
www.racing-cars.com.
Serpent Inc. USA
 West Park Center, 2830 NW 79th Ave.,
 Miami, FL 33122; (305) 639-9665;
 fax (305) 639-9658; www.hudy.net.
Tamiya America Inc.
 2 Orion, Aliso Viejo, CA 92656-4200;
 (800) TAMIYA-A; fax (949) 362-2250;
www.tamiya.com.
Team Kinwald
 Distributed by Trinity Products Inc.
Team Losi
 13848 Magnolia Ave., Chino, CA 91710;
 (909) 465-9728; fax (909) 590-1496;
www.teamlosi.com.
Team Orion Inc.
 22601 La Palma, Ste. 103, Yorba Linda,
 CA 92877; (714) 694-2812;
 fax (714) 694-2815;
www.team-orion.com.
Thunder Tech Racing
 25637 Parkside Dr., Channahon, IL
 60440; (815) 467-0621;
 fax (815) 467-0623.
Thunder Tiger USA
 Distributed by Ace Hobby Distributors.
Top
 Distributed by Integy.
TOP Engines
 Distributed by Savon Hobbies.
Traxxas Corp.
 12150 Shiloh Rd., #120, Dallas, TX
 75228; (972) 613-3300;
 fax (972) 613-3599; www.traxxas.com.
Trinity Products Inc.
 36 Meridian Rd., Edison, NJ 08820;
 (732) 635-1600; fax (732) 635-1640;
www.teamtrinity.com.
W.S. Deans Co.
 10875 Portal Dr., Los Alamitos CA
 90720; (714) 828-6494; fax (714) 828-
 6252; [www.deansco@earthlink.net](mailto:deansco@earthlink.net).
Yokomo USA
 Airport Business Center, 17951 Skypark
 Cir., Ste. K, Irvine, CA 92614;
 (949) 252-8663; fax (949) 252-8657;
www.yokomousa.com.

Chris's BACK LOT

Have a cool Yule

So, Homer Hetmanski, which would you wish for this holiday season? Love and harmony with our fellow man, or ... RC stuff? A white snowy Christmas, or ... RC stuff? Peace on earth, or ... RC stuff?

Hmmmmmm;
now, let me see
OK, I'll take
RC stuff!

He's so predictable.
Personally, I want it all!
Peace on earth and RC
stuff. Here's my list.

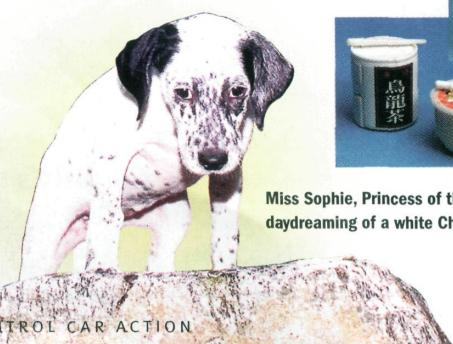


Miss Sophie Unlimited Hydro. This is Enforcer Boats' totally awesome, beautifully crafted, 4½-foot-long, 30cc gas/ignition-powered, shovelnose Unlimited Hydro called the Stingray. It's a fire-breathing water rocket that I'll be reviewing soon in our sister publication, *Radio Control Boat Modeler*.

Fat Christmas cookie
for "Homer."



Horizon Hobby's ready-to-go Firebird. Even Pete Vieira can fly this one the first time out.



Miss Sophie, Princess of the Rock: daydreaming of a white Christmas.



Lunchbots—fast-food-fighting Samurai friends. Don't mess with Soup Assassin. He has a "beef retort punch." (A what?)



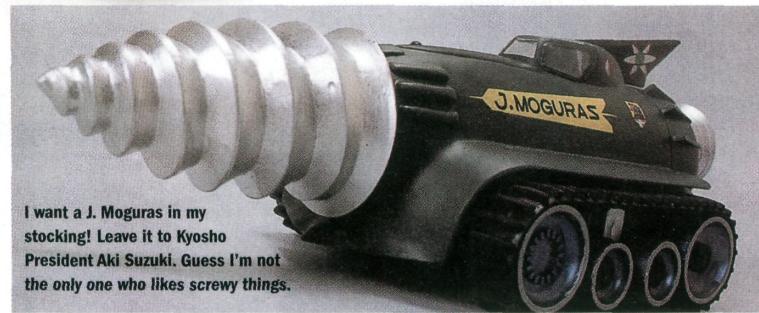
Tamiya's 1/10-scale
Tyrell 6-wheel F1 car. Why?
Because it's strange—like me!



This one-off monster
Volvo can't be purchased
in any shop, but I'm
wishing for one anyway.
C'mon, Santa



Kyosho Mini-Z
racers for the
"Indoor tour" during
those cold winter
months.



I want a J. Mogras in my
stocking! Leave it to Kyosho
President Aki Suzuki. Guess I'm not
the only one who likes screwy things.



Big RC Tanks' huge 1/6-scale Tiger tank, for when I get annoyed
at the track. Check them out at www.interdacom.ru/~tank/.



The opinions expressed on this page do not necessarily represent the opinions of the entire *Car Action* staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o *R/C Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. My email address is: chrisc@airage.com.

BY CHRIS CHIANELLI

